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Forest Service

Southwestern Region

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Environmental Assessment

Apache Pit Plan of Operations and Reclamation Plan

Sacramento Ranger District, Lincoln National Forest, Otero County, New Mexico

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Table of Contents

List of Figures

List of Tables

Chapter 1 – Purpose and Need

Introduction and Background

The Sacramento Ranger District of the Lincoln National Forest is proposing the **Apache Pit Plan of Operations and Reclamation Plan** (hereafter called **Apache Pit Project**). This proposal would allow continued operations and additional expansion of the existing gravel pit area and would develop a Plan of Operations and a Reclamation Plan. The project area is located in Otero County, approximately 2 miles east of Cloudcroft NM on Hwy 82. The legal location is Township 15 S, Range 13E, Sec. 31 (See Figure 1).

The Apache Pit gravel site provides a local source of sand and gravel, Salable Common Variety Mineral Materials. The existing pit site covers approximately 10 acres and has operated for more than 16 years on the Sacramento Ranger District. The current Permittee/operator is operating under mineral material permits for removal of up to 10,000 cubic yards of gravel at one time, two to three times a year.

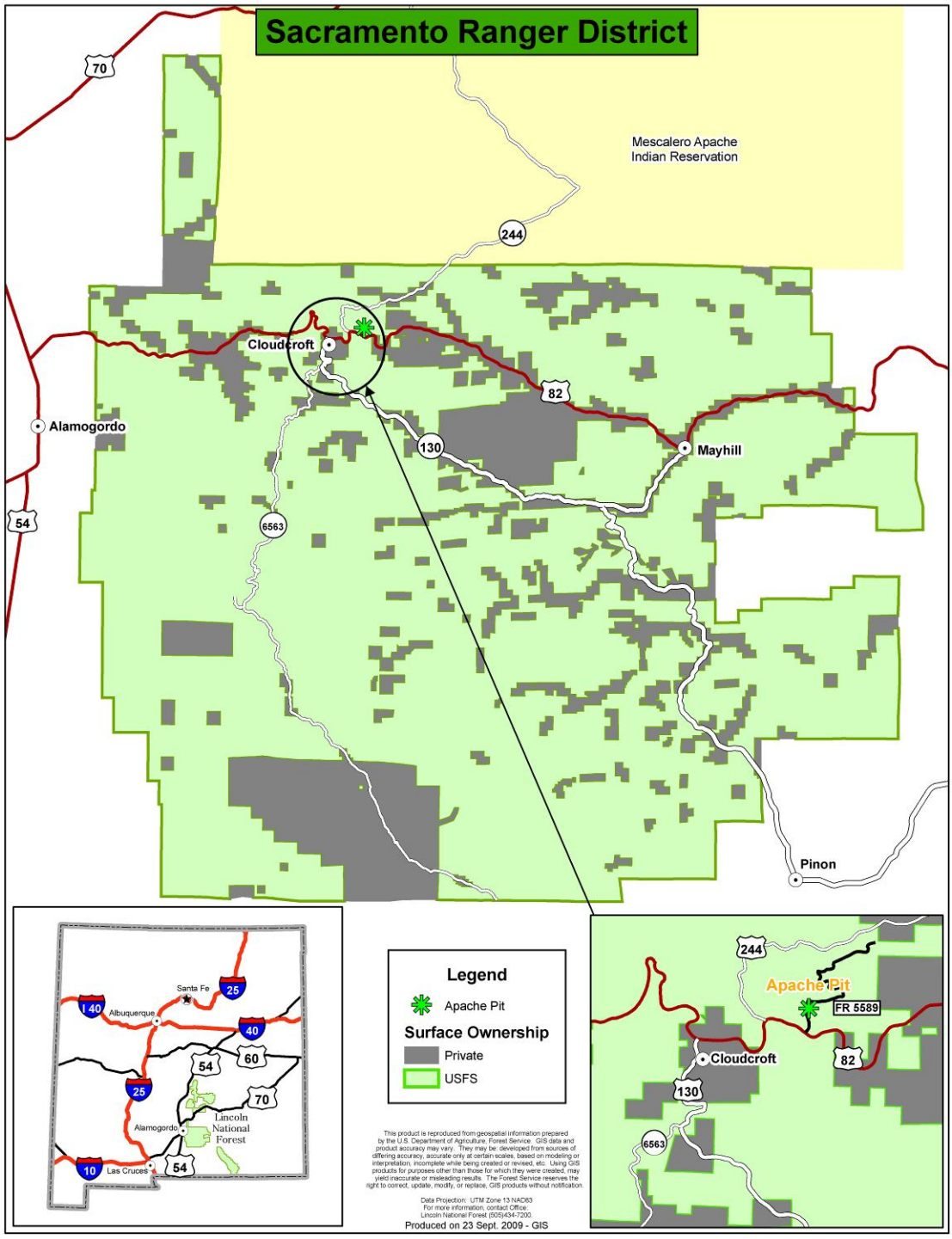
Purpose and Need for Action

The purpose of the proposed action is to determine the expansion boundary for the pit and develop a Plan of Operations and Reclamation Plan to manage the removal of sand and gravel with a plan for its ultimate closure. The reclamation plan would include options for future uses of the area once the pit closes.

The overall objectives of this project are to:

- Develop a Plan of Operations that would meet the long-term objectives for the area.
- Develop a pit expansion plan for future use based on the available material (approximately 1.5 million cubic yards) for an estimated 30 years.
- Implement a reclamation plan to possibly implement as the pit is mined, keeping in mind potential future uses.
- Authorize the gravel pit Plan of Operations and Reclamation Plan under a Mineral Materials Permit.
- Maintain a viable business operation and opportunities for the community as well as provide the opportunity for access to a local supply of Salable Common Variety Mineral materials for local, County, State and Forest infrastructure and maintenance.
- Meet laws and regulations associated with mining Salable Common Variety Mineral Materials.

Figure 1. Apache Pit Project Vicinity Map



Proposed Action in Brief

The Sacramento Ranger District is proposing an expansion of the allowable mining area boundary of Apache Pit up to18 acres. This proposed expansion would occur to the east and south of the existing pit area to allow for future mining (See Chapter 2, Map Figure 3). Present and future Mineral Materials Permits for the gravel pit would be authorized by the Forest Service under the guidance of the Plan of Operations, which also incorporates a Reclamation Plan. As part of the Plan of Operations, reclamation would leave a final pit configuration with slopes of 3:1 (3 horizontal to 1 vertical) and would be reclaimed with appropriate vegetation and erosion control features. To insure reclamation is performed, an appropriate bond would be collected from the present and any future pit operator(s). The timber would be sold as appropriate and per regulations. Re-route trail 124 for safety reasons. Temporary roads of less than ½ mile may be needed to remove any timber. The Proposed Action is presented in more detail in Chapter 2.

Relationship to the Forest Plan

The Apache Pit project area is covered by one Management Area; (MA), 2H (Upper James), and by one 5th Code Hydrologic Unit (watershed); Upper Rio Peñasco. The primary emphasis in Management Area 2H (Upper James) is developed and dispersed recreation, wildlife habitat and timber. This project is guided by management direction found in the Lincoln National Forest Land and Resource Management Plan (LRMP).

The proposed activities are consistent with Lincoln National Forest Direction. Proposed mining would follow all Lincoln National Forest Land Management Plan standards and guidelines for minerals including: G07 - locate borrow areas and quarries where they will serve long term needs. Include mining and reclamation plan in all permits for mineral material pits; Provide common variety mineral materials for local, County, State and Forest roads on or providing access to the Forest. Material will be made available for other roads only upon adequate documentation that other sources are not available; and mineral material will be available for personal and commercial use when it has been determined through an environmental analysis that it will not be in conflict with other resources or activities.

Public Involvement

Public scoping is integral to the environmental analysis process. The Apache Pit Project was first listed in the Lincoln National Forest Schedule of Proposed Actions on October 1st, 2009. The Sacramento District Ranger issued a letter on April 28th, 2010 requesting scoping comments regarding the Apache Pit Project proposed action. The letter was mailed to 47 individuals and organizations. Responses were received from four (4) individuals and organizations. The complete scoping mailing list and responses received during scoping are in the project file. In addition, the Sacramento District Ranger issued a letter on October 4th, 2010 requesting formal comments regarding the Apache Pit Project proposed action. The letter was mailed to 47 individuals and organizations. A legal notice was published in the newspaper of record on October 7th, 2010 and informed the public that the formal notice and comment period for the Apache Pit project was from October 7th - November 6th, 2010. No responses were received during the formal notice and comment period. The complete formal notice and comment mailing list is in the project files.

Comments received from the public were used to determine the range of actions, alternatives, and impacts to be considered in an analysis. Issues are points of discussion, dispute or debate about the environmental effects of the proposed actions. Using the comments from the public, organizations, other federal and State agencies, tribal governments, the interdisciplinary team (IDT) and District Ranger identified potential issues.

Issues

The Forest Service separated the issues into several groups: key issues, analysis issues, and non-key issues.

Key issues were defined as those directly or indirectly caused by implementing the proposed action. No Key issues were identified during scoping or by the Responsible Official.

Analysis issues are not considered key issues but are useful and relevant to this project and to compare the effects of the Proposed Action and any other alternatives. Several analysis issues were identified during scoping and are discussed in the next section.

Non-key issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. A scoping summary and issue analysis documentation may be found in the project record.

Analysis Issues

The IDT and the Sacramento District Ranger identified the following issues raised during public scoping. These analysis issues include:

1. **Effects on Mexican Spotted Owl (MSO):** The proposed action could have potential impacts on MSO due to pit expansion and the activities associated with the pit operations.
    - **Issue Disposition:** The proposed action would include project design features to reduce potential impacts on the MSO. These include WL-2 and WL-3, found in Table 1.
2. **Effects on Air Quality:** The proposed action could have potential impacts on air quality due to the pit expansion, blasting activities and other activities associated with the pit operations.
    1. **Issue Disposition:** The proposed action would include project design features to reduce potential impacts on air quality. These include AQ-1 to AQ-3, found in Table 1.
3. **Effects on Ground and Surface Water Quality:** The proposed action could have potential impacts on ground and surface water quality.
    - **Issue Disposition:** The proposed action would include project design features to reduce potential impacts on water quality. These include WS-1 toWS-15, found in Table 1.

Decision Framework

The responsible official will be the Sacramento District Ranger. The decision to be made by the responsible official will be:

- To approve a Pit Plan of Operations and Reclamation Plan, and issue a Minerals Materials Permit with specific reclamation activities outlined in the NEPA documents, and as implemented through the Reclamation Plan.
- Or choose another alternative or portions of other alternatives.

Chapter 2 – Alternatives, including the Proposed Action

This chapter describes and compares alternatives considered for the project. It includes a description of each alternative considered. This section also presents alternatives in comparative form, sharply defining differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon design of the alternative and some of the information is based upon the environmental, social and economic effects of implementing each alternative.

Alternatives Considered in Detail

The No Action and Proposed Action Alternatives are considered in this analysis. The No Action and the Proposed Action Alternatives were designed to meet the management direction in the forest plan. Several options were discussed in the development of the Proposed Action, but those options were not carried forward as alternatives considered in detail. The project record file has detailed information on the development of the Proposed Action and the other options considered.

Alternative 1 - No Action

Under the No Action Alternative, current mineral material permits would continue to guide operation of the pit. The proposed gravel pit expansion would not be authorized (See Figure 2 map). The No Action Alternative would mean the removal of sand and gravel would continue under a mineral use permit until the pit reaches the authorized boundary approved in 2006. The existing mineral material permits are issued for 10,000 cubic yards or less, 2-3 times per year.

Current management means the existing operator would continue to obtain mineral use permits as needed. These permits would be issued until the authorized pit boundary is reached at which time the pit would close. There would be also a limited reclamation plan.

Alternative 2 - Proposed Action

The allowable pit mining area boundary would be expanded approximately 18 acres to the east and south of the existing pit area for future mining (See Figure 3 map).

Present and future Mineral Materials Permits for the gravel pit would be authorized with guidance of the Plan of Operations, which incorporates a Reclamation Plan.

As part of the Plan of Operations, reclamation would be implemented that would leave a final pit configuration with slopes of 3:1 (3-foot horizontal to 1-foot vertical) and would be reclaimed with appropriate vegetation and erosion control features. To insure reclamation is performed, an appropriate bond would be collected from the present and any future pit operator(s).

For safety issues trail 124 would be re-routed further away from Apache Pit. Trail signs would be replaced and signs posted regarding pit safety concerns as appropriate.

The timber would be sold as appropriate and per regulations. Temporary roads of less than ½ mile may be needed to remove any timber.

Figure 2. Apache Pit - No Action Map

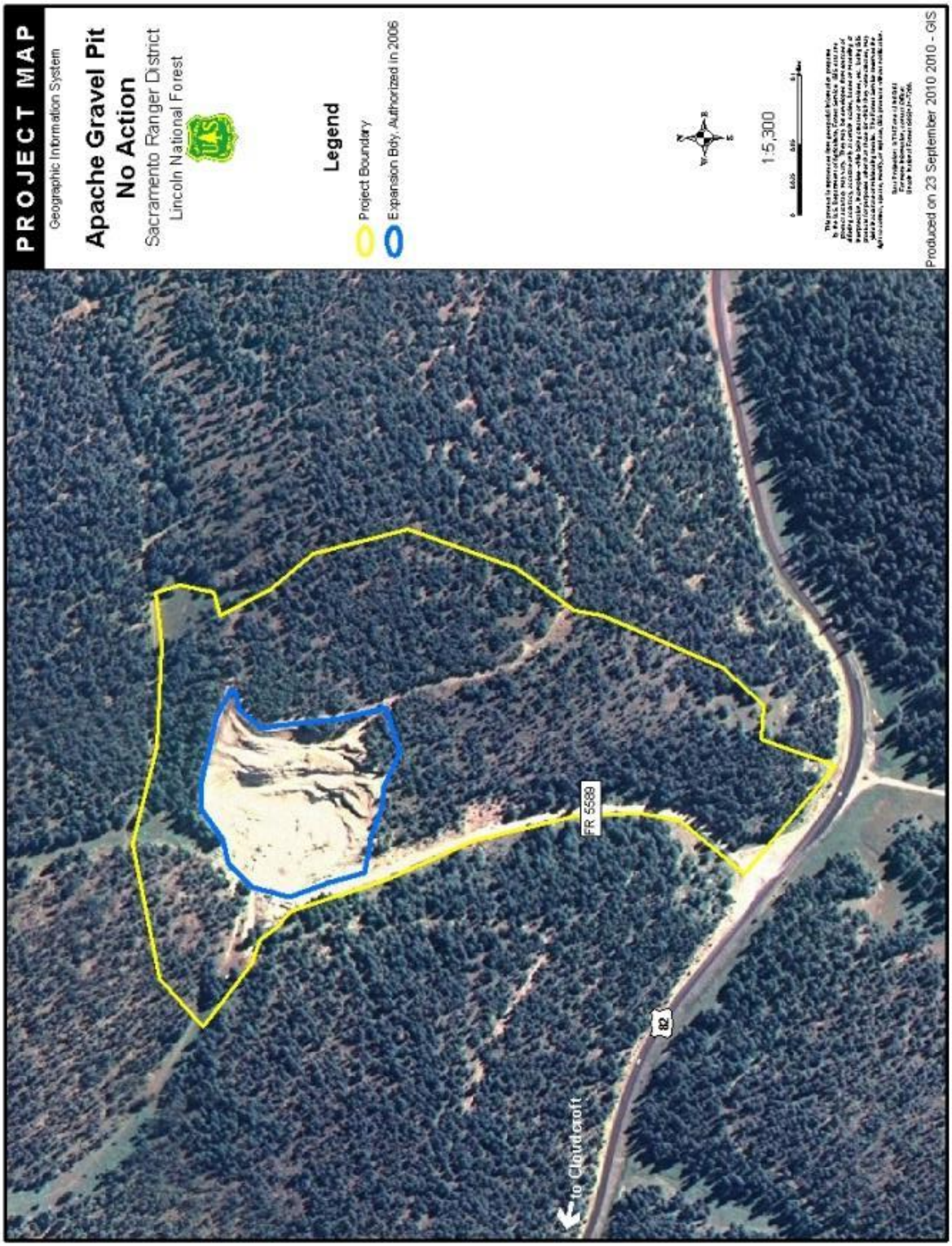
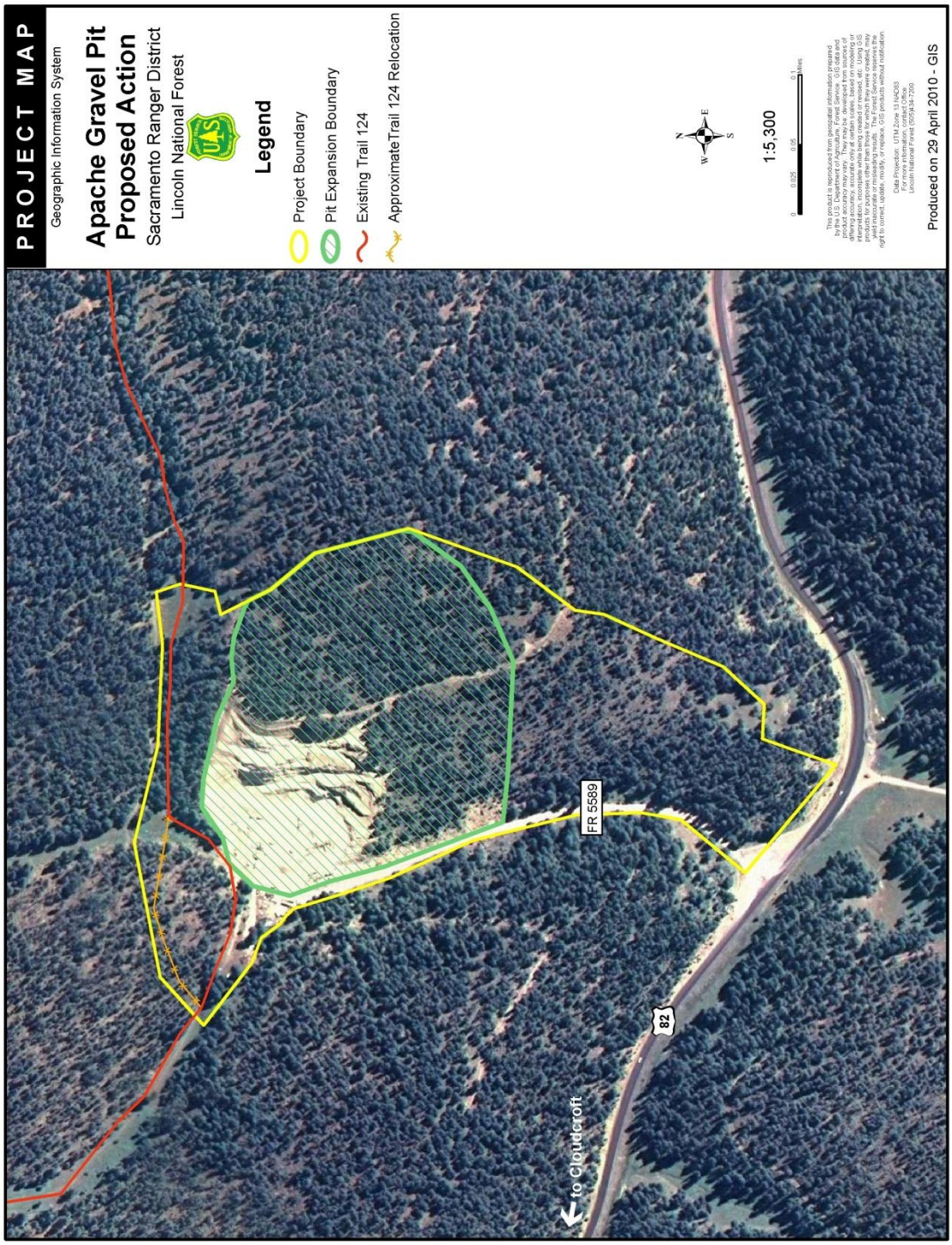


Figure 3. Apache Pit - Proposed Action Map



Project Design Features and Monitoring Tasks

Table 1 includes project design features (PDF), and Table 2 includes monitoring tasks that would be implemented to avoid, minimize, or eliminate adverse impacts that might result from implementation of the Proposed Action. These project design features are integral to, and are considered part of, the Proposed Action.

Table 1. Project Design Features (PDF) for Proposed Action

PDF Item	Description of Project Design feature
Air Quality	
AQ-1	Applicable local, Otero County and New Mexico state regulations regarding fugitive dust control would be followed to reduce the impacts of fugitive dust and meet state air aquality requirements.
AQ-2	Areas disturbed by the mining activities, within and adjacent to the project area, would be reclaimed to avoid long-term problems with erosion and fugitive dust.
AQ-3	Title 20 Environmental Protection Chapter Air Quality Guidelines NMAC 20.2 would be followed for emissions allowable for permit use.
Minerals	
MIN-1	Pit operations, plan of operations, reclamation plan, and any inspection needs would be coordinated with District lands/special use staff and permit holder.
Recreation	
REC-1	Trail 124 would be re-routed. Trail signs would be replaced and signs posted regarding pit safety concerns as appropriate.
REC-2	The rerouted portion of Trail 124 would be designed to meet Trail Class 3 requirements.
REC-3	The Design Tread Width of trail 124 would be designed for one lane traffic, 18”-36” and at switchbacks can be up to 48”.
REC-4	The Design Surface of Trail 124 would use native material with some on-site borrow, pavers, or imported materials. Materal would be a good mixture of fines and small rocks. Material would be compacted well and be erosion resistant. Trail surface would be generally smooth with few protrusions exceeding 6”.
REC-5	The Design Grade of Trail 124 would be less than 15% and where possible be between 5-8%. The short pitch max would be 25% up to 200’ in length but in no more than 10% of the trail.
REC-6	The Design Cross-Slope of Trail 124 would be 5% for target range and 10% maximum.
REC-7	The Design Clearing of Trail 124 would be to remove all brush and tree regeneration less than 4” diameter within trail corridor and 12”- 18” outside of tread edge and 8’ high.
REC-8	The Design Turn radius for Trail 124 would be between 5’- 6’.
Special Uses	
SU-1	Pit operations, plan of operations, and any inspection needs would be coordinated with District lands/special use staff and permit holders.
SU-2	Haul trucks hauling materials would be limited to 25 mph on FSR 5589 or as otherwise posted to minimize dust and facilitate safety.
SU-3	No stockpiling of mining material on site (stockpiling of material for reclamation purposes is authorized).
SU-4	The site would require concurrent reclamation so idealy no more than three acres would be unreclaimed at any one time.

PDF Item	Description of Project Design feature
SU-5	Erosion control barriers consisting of certified weed-free straw bales, straw wattles, and/or silt fencing would be constructed as needed during mining or reclamation to prevent erosion from occurring.
SU-6	Oil, fuel, and hydraulic fluids from machinery or equipment shall be changed, collected, and disposed of off of National Forest System lands.
SU-7	No storage of petroleum products would be permitted at the project site.
Safety	
SAF-1	Ensure safety measures are incorporated to protect the public during pit operation, reclamation activities, and final pit closure.
Silviculture / Timber	
SILV-1	After project completion this area would no longer be designated as suitable timber (FSM-2400), therefore no reforestation or monitoring is needed.
TIM-1	All timber shall be cut and removed by the permittee, in accordance with the USDA Forest Service. Permittee may obtain permits and/or a contract to cut and remove the trees, as needed, through the Sacramento Ranger District Office.
TIM-2	Operator shall comply with all USDA Forest Service rules and regulations (FSM-2400), as well as any imposed seasonal restrictions.
Transportation /Roads	
TRANS-1	Requirements for the protection of adjacent resources or improvements such as streams, lakes, vegetation, and facilities. No streams or lakes present. Identify vegetation for possible avoidance. Also see WL-1.
TRANS-2	Smoothness required for desired operating speed and for user comfort and convenience. The level of smoothness should be consistent with the road design. Also see AQ-1. This road is classified as an Objective Maintenance Level 1 road with an Operational Maintenance Level of 2, which allows for use of the road by the permittee, or may be available and suitable for non-motorized uses but has an intermittent closure to public vehicular traffic.
TRANS-3	Acceptability of dust. Also see AQ-1.
TRANS-4	Season of use and approximate volumes and types of traffic. This road is closed by the Permittee when not in use by the Permittee. This road experiences a high volume of large traffic such as large dump trucks and trailers, loaders, dozers, graders and transport vehicles for gravel pit operations. Also see TRANS-2.
TRANS-5	Current and future road operation and maintenance strategies. This road shall remain a Level 1 Objective, Level 2 Operational for the duration of pit operation.
Vegetation / Reclamation	
VEG-1	All reclamation material for seeding or erosion mulches will be noxious weed-free per the State of NM regulations and Lincoln NF standards.
Watershed / Soils	
WS-1	Use BMPs for erosion control to reduce the effects of sedimentation and surface water runnoff caused by removing mineral material and traffic on road to the pit location.
WS-2	Ensure that the altered flow caused by the removal of material of the mineral site would not affect surface or ground water and would not impact or compensate nearby public facilities.
WS-3	Ensure storage of quantities of hazardous waste that meet state regulatory requirements such as oil and cleaner fluid are stored above the one hundred year flood line.

PDF Item	Description of Project Design feature
WS-4	Erosion control barriers of various kinds would be constructed as needed during mining or reclamation to prevent erosion from occurring.
WS-5	Reduce on-site soil loss to within tolerable soil loss limits and protect surface and groundwater quality from toxic substances through reclamation of mined lands. FSM 2530.2, FSM 2552.03, and R3 Supplemental.
WS-6	A spill kit would be kept on site and spills would be contained and contaminated material would be disposed of in an authorized facility off of National Forest lands.
WS-7	In the event "mineralized zones" are encountered during the lifetime of this operation, additional measures would be taken to insure that the material does not pose a threat to water quality, at either the location of extraction or the final destination.
WS-8	A Storm Water Pollution Prevention Plan (SWPPP) would be prepared for the site and would note the appropriate Best Management Practices (BMPs) to be installed and maintained to prevent, to the extent practicable, pollutants in storm water runoff from entering surface and ground water.
WS-9	Non-structural and structural BMPs would be developed and implemented to include such things as good housekeeping, preventive maintenance, spill prevention and response procedures, periodic inspections, employee training, record keeping, non-storm water evaluations and certifications, sediment and erosion control, as well as implementation and maintenance of traditional storm water management practices (i.e., sediment/settling ponds, check dams, silt fences, straw bale barriers, perimeter berms, run-on diversion structures), where appropriate.
WS-10	Maintain an Oil and Hazardous Substance Spill Contingency Plan and Spill Prevention Control and Countermeasure (SPCC) Plan at site with contact information of designated emergency spill coordinators.
WS-11	Use BMPs for erosion control to reduce the effects of sedimentation and surface water runoff caused by removing pit material and traffic on road to the pit location.
WS-12	Road surface treatment to prevent loss of material. These treatments may include watering, dust oiling, penetration oiling, magnesium chloride, lignin sulfonate, calcium chloride, aggregate surfacing, chip-sealing, or paving.
WS-13	Ensure removal and placement of material is done properly to maintain vertical and horizontal stability in pit walls and stockpiled properly to ensure stability of material.
WS-14	Stockpile material for purposes of reclamation in a manner to reduce soil erosion.
WS-15	Topsoil removal would occur immediately following timber removal for pit expansion.
Wildlife	
WL-1	Sacramento Mountain Checkerspot Butterfly (SMCB) protection measures: • All disturbance activities on the pit access road would be kept to a minimum (example: blading to reopen access road would only be completed when/where safety hazards occur). • Any necessary skidding would occur within timber harvest or pit operation areas • Any slash or decking associated with timber removal would be placed outside of meadows, or in areas already devoid of vegetation. • Surveys would be conducted prior to trail construction in butterfly habitat. • Identified pre-diapause sites would be flagged and when possible, entirely avoided. If pre-diapause sites cannot be avoided then they would be transplanted to a suitable non-disturbance area before trail building or road disturbance can occur.
WL-2	Mexican Spotted Owl (MSO) protection measures:

PDF Item	Description of Project Design feature
	• Project actions would be confined to the project area and would strictly avoid the adjacent protected activity center. • Pit blasting operations would be prohibited during MSO breeding season (March 1st through August 31st); however, a breeding season clearance for this activity could be granted following same-season confirmation of MSO non-reproduction.
WL-3	Additional WL protection measures: • When project activities may adversely affect a previously unknown location involving a listed threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements, consult with the US Fish and Wildlife Service to resolve the conflict. • Threatened, endangered, and sensitive animal species would be managed with appropriate mitigation measures based on the most up-to-date surveys and science.

Table 2. Monitoring Requirements for Proposed Action

Monitoring Item	Description of Monitoring Item
Minerals	Quarterly mineral use reports would be needed to monitor the amount of materials taken out of the pit and how fast the pit is expanding. The purpose of the pit operations is to supply the surrounding area with adequate sand and gravel material for up to 30 years.
Air Quality	Monitoring for air quality would occur.
Recreation and Visual Quality	Monitoring for recreation resources would occur.
Silviculture	Post harvest monitoring is non-applicable on this project due to the future desired condition being a re-classification of the land to non-suitable timber (FSM-2400). No monitoring is needed.
Watershed / Soils	Monitoring for water quality would occur.
Wildlife wl-m1	Monitor early successional habitat for Sacramento Mountains checker-spot butterfly and relocate larval tents when and if necessary.
Wildlife wl-m2	Monitor Mexican Spotted Owl to determine nesting status during breeding season.

Comparison of Alternatives

This section provides a summary of effects of implementing each alternative. The summarized information in Table 3 focuses on activities, purpose and need goals, wildlife management indicator species (MIS), Region 3 sensitive species, federally listed threatened species, and other resources in the project area where different levels of effects can be distinguished between alternatives.

Table 3. Summary Comparison of Alternatives

Project Activities	Alternative 1 No Action	Alternative 2 Proposed Action
Develop a Plan of Operations that would meet the long-term objectives for the area.	*A Plan of Operations would not be developed.*	*A Plan of Operations would be developed.*
Develop a pit expansion plan for future use based on the available material (approximately 1.5 million cubic yards) for an estimated 30 years.	*The pit would continue to operate until the approve 2006 expansion boundary is reached.*	*The pit would be expanded by up to 18 acres and could operate for up to 30 years.*
Develop a Plan of Operations to include reclamation as the pit is mined, keeping in mind potential future final uses.	*A reclamation plan would be limited.*	*An indepth reclamation plan would be developed.*
Authorize current and future Mineral Materials Contracts under a Plan of Operations.	*The would be no Plan of Operations. Mineral materials permits would be issued for 10,0000 yds ^{3} at a time until the aproved 2006 boundary is reached.*	*Mineral Materials contracts would be issued under an approved Plan of Operations*
Maintain a viable business operation and opportunities for the community as well as meet laws and regulations associated with mining Salable Common Variety Mineral Materials.	*Pit operations would cease once the expansion reaches the boundary approved in 2006*	*A viable business operation and opportunities for the community would be continued for the life of the operation.*
Relocate a portion of trail number 124 for public safety.	*Trail #124 would not be rerouted. Recreationists would continue to pass close to the pit.*	*Trail # 124 would be rerouted. Recreationists would be routed further from the pit to minimize access to the pit.*
The allowable pit mining area boundary would be expanded by up to 18 acres to allow for future mining.	*The allowable pit mining area boundary would be expanded to the area approved in 2006.*	*The allowable pit mining area boundary would be expanded by up to 18 acres.*
Present and future Mineral Materials Permits for the gravel pit would be authorized under the Plan of Operations, which incorporates a	*Operations would occur without a Plan of Operations. There would be a limited reclamation plan. Each mineral materials*	*Permits for the gravel pit would be authorized by the Plan of Operations. There would be an approved*

reclamation plan.	*permit for 10,000 would be authorized as needed.*	*reclamation plan.*
As part of the Plan of Operations, reclamation would be implemented that would leave a final pit configuration with slopes of 3:1 (3 horizontal to 1 vertical) and would be reclaimed with appropriate vegetation and erosion control features.	*Reclamation would be limited.*	*A reclamation plan would be developed, and implemented as the pit was expanded.*
The timber would be removed as appropriate and per regulations.	*Timber would be removed as needed in the area approved for expansion in 2006.*	*Timber would be removed as needed as the pit expands into the new boundary.*
Allow for dust abatement on the access road to the gravel pit (Forest Service road 5589) through various methods including but not limited to; water, lignin Sulfonate, or magnesium chloride.	*Dust ababement on the access road would be minimal or would not occurr.*	*Dust ababement on the access road would occurr through various methods.*
Wildlife Management Indicator Species	**Alternative 1 No Action**	**Alternative 2 Proposed Action**
Hairy Woodpecker	*Alternative 1 would reduce nesting and foraging habitat within the project area and the previously mined area on a limited spatial scale. May slightly contribute to a downward trend but would not alter viability standards for the species.*	*Alternative 2 reduces nesting and foraging habitat within the project area and the previously mined area on a limited spatial scale. May slightly contribute to a downward trend but would not alter viability standards for the species.*
Mexican Vole	*Alternative 1 does not directly reduce sufficient burrowing, foraging, and cover habitat for the Mexican vole within the project area. It indirectly prevents the creation of Mexican vole habitat within the project area. This project alternative would not alter viability standards for this species.*	*Alternative 2 leaves sufficient burrowing, foraging, and cover habitat for Mexican vole. This alternative disturbs more Mexican vole habitat,but direct effects are spatially and temporally minimal, with any indirect avoidance effects not likely to affect behavior that would be detrimental to individuals over the long term.*
Elk	*Alternative 1 would not prevent the forest in providing suitable habitat for this MIS, but would slightly decrease cover and forage availability in the area. Viability for this species would not be altered by this alternative.*	*Alternative 2 would not prevent the forest in providing suitable habitat for this MIS. Cover would be lost, but forage may be gained after reclamation. Viability for this species would not be altered*

		by this alternative. *Viability for this species would not be altered by this alternative.due to their seasonal usage, current availability, and trend for this habitat, along with the overall flexibility of the species.*
Region 3 Sensitive Species	**Alternative 1 No Action**	**Alternative 2 Proposed Action**
Sacramento Mountains checkerspot butterfly	*May impact individual butterflies and/or their habitat but would not likely result in a trend toward listing or loss of species viability.*	*May impact individuals or habitat but would not likely contribute towards federal listing.* *Due to the small scale of occupied habitat found within the analysis area, minimal usage as compared to overall occupied habitat across its range, the relative lack of habitat within the proposed action area, and the mitigation to help prevent direct mortality, project activies would not inhibit species viability in a way that would trend toward listing.* *Implementation may impact, but is not likely to impact the Sacramento Mountains checkerspot butterfly.*
Federally Listed Threatened Species	**Alternative 1 No Action**	**Alternative 2 Proposed Action**
Mexican Spotted Owl *The Basin and Range-East Recovery Unit currently has 146 established Protected Activity Centers (PACs) amounting to approximately 92,443-ac of protected MSO habitat Forest-wide. Of the 146 established PACs within the recovery unit, there are currently 117 (80%) PACs (approximately 72,542-ac) that have been established within the Sacramento Ranger District. Approximately 100,966 acres on the Sacramento Ranger District were designated as MSO Critical Habitat on August 24, 2004, much of which falls within already designated PACs. No designated MSO Critical Habitat*	*Timber harvest and sand/gravel removal would not take place within the Little Apache PAC.* *This alternative meets Condition C1 and may affect, likely adversely affect the MSO, based on the cumulative nature of habitat removal that has already occurred and that would occur within the action area.* *Alternative 1 contributes to the removal of future suitable nest-roost habitat and renders the area unsuitable for mature mixed conifer nest-roost habitat development.*	*Timber harvest and sand/gravel removal would not take place within the Little Apache PAC.* *Alternative 2 proposes the removal of approximately 18-acres of restricted area mixed conifer habitat for timber removal and sand/gravel extraction.* *There are no documented nest or roost sites within the proposed action area; however, a limited number of live trees >24-in diameter breast height (dbh) and snags >18-in dbh are present within the proposed action area.*

falls within the project area or the Little Apache PAC. *There are approximately 18 acres of "restricted area", mixed conifer habitat found within the project area, immediately adjacent to the Little Apache PAC. The MSO Recovery Plan defines restricted areas as unoccupied, mixed conifer forest types occurring on slopes <40%, harvested within the past 20 years. Currently, there is little opportunity for nesting within the proposed timber/gravel removal area, with the exception of a few remaining larger trees and snags.* *The Little Apache PAC is approximately 625 acres, and the Little Apache pair is the only known pair within the vicinity of the project that may be affected by the project.* *Since 1994, birds occupying the Little Apache PAC have consistently nested >.30-mi away. Based on nest site history, the short duration of the disturbance, and relative tolerance to saw noise outside of .06-mi, saw operations may cause minimal, but insignificant disturbance toward the end of Apache Pit life. More effects may occur if owls deviated from their documented, historic nest site areas. Designated Critical Habitat does not occur within the project area. It is assumed that if the alternatives do not occur within Critical Habitat, there is no effect to it and that no further analysis for critical habitat is warranted.*		*Some of these trees may be conducive to future MSO nesting and/or roosting opportunities.* *This alternative meets Condition C1 and may effect, likely adversely affect the MSO, based on the cumulative nature of habitat removal that would occur within the project area.* *Recruitment of trees and management towards desirable nest-roost conditions for the species are not met by the proposed action. The action would virtually eliminate the possibility of the 18 acre expansion meeting threshold conditions described within the Recovery Plan and would effectively render the area largely unsuitable for future mature mixed conifer establishment and nest-roost habitat development.*
Other Resources	**Alternative 1 No Action**	**Alternative 2 Proposed Action**
Timber/Silviculture	*Trees in the expansion area aproved in 2006 would be removed as needed.*	*Trees would be cut and removed from within the 18 acres pit expansion boundary, over time.*
Recreation	*There would be no long-term effects to the recreation settings or overall recreation opportunities.*	*Mine expansion would be up to 18 acres which would be taken out of the Forested component of the Sacramento Ranger District. Recreation*

		project design features would re-route and protect trail # 124.
Minerals	*Limits amount of minerals (sand/gravel) abailable over time.*	*Utilization of larger capacity. Provides community and local area with sand and gravel resource for up to 30 years.*
Hydrology	*Sedimentation would impact the water quality from surface runoff.*	*The gravel pit would continue operation reducing the impact on the land by improving operational procedures by having a Storm Water Prevention Plan. In addition Watershed/Soils project design features WS-1 - WS-15 would reduce impacts.*
Soils	*Soil would be impacted from heavy trafficw from sand and gravel removal operations. Erosion on site would continue without additional best management practices to reduce the effects of activity.*	*Gravel pit operations would operate in a way to reduce its impact on soil erosion and water quality. In addition Watershed/Soils project design features WS-1 - WS-15 would reduce impacts.*
Air quality	*Air quality would be impacted in the project area by sand and gravel removal operations.*	*Gravel pit operations would operate in a way to reduce air quality impacts. Air Quality project design features AQ-1 - AQ-3 would help to reduce impacts.*
Roads	*Erosion would continue to impact the area causing increase road maintenance and sedimentation in surface water runoff from the pit.*	*Highly disturbed areas at the site would have less erosion potential. Operational procedures (see Transportation/Roads Project Design Features) would reduce sedimentation. Road maintenance would be reduced.*
Social-Economics	*Pit would eventually close and the current operator would go out of business at this location. The local source of sand and gravel for this area would no longer be available.*	*Pit would coninue operation for up to 30 years and the community and surrounding area would benefit from the local supply of sand and gravel.*
Cultural Resources	*There are no cultural resources that would be affected.*	*There are no cultural resources that would be affected.*

Chapter 3 - Environmental Consequences

This section summarizes the social, economics, physical and biological resources of the affected project area and potential changes to those environments due to implementation of the alternatives. It also presents the analytical basis for comparison of alternatives presented in Table 3 (above, at the end of EA Chapter 2).

Social and Economic Resources

Existing Condition

Apache Pit is a sand and gravel operation 2 miles east of Cloudcroft, NM. Apache Pit is on approximately 10 acres of FS lands. The current Permittee/operator is operating under mineral material permits for removal of up to 10,000 cubic yards of sand/gravel at one time 2-3 times a year.

Approximately 30,000 – 40,000 cubic yards of sand, gravel, rock and rip rap per year comes from Apache Pit. Much of the surrounding communities including but not limited to, benefit from the product from the pit: Cloudcroft, Alamogordo and much of the road products on the Lincoln National forest. The Apache Pit is on the Sacramento Ranger District on the Lincoln National Forest. The Sacramento RD is the largest of three ranger districts, with about 450,000 acres or 41 percent of Lincoln NF-owned land under its management. The Sacramento RD is contained entirely within Otero County, with its headquarters in Cloudcroft, NM.

Methodology & Analysis Process

This section was compiled by analyzing area data from the following sources:

- Economic Profile Systems–Human Dimensions Toolkit Profiles by Headwaters Economics: EPS-HDT is a software application that produces detailed socioeconomic reports of counties, and states. The data is derived from federal data sources including, Bureau of Economic Analysis and Bureau of the Census, U.S. Department of Commerce; and Bureau of Labor Statistics, U.S. Department of Labor.

- Socioeconomic Assessment of the Lincoln National Forest by University of New Mexico Bureau of Business and Economic Research: Assessment of the socioeconomic and cultural relationships between the ranger districts (RDs) of Lincoln National Forest (NF) and their neighboring communities. This assessment was commissioned by the Southwestern Regional Office of the United States Department of Agriculture Forest Service (FS), and serves as a source of information (UNM BBER pg. ix 2007)

- U.S. Census Bureau's 1990 & 2000 Census: Decennial data on population and population characteristics

Social Conditions

Table 4 provides a summary of population for the village of Cloudcroft, Otero County and New Mexico. The table shows the village of Cloudcroft accounts for 1.1 percent of the total Otero

county population of 67,018 in 2010. Although Cloudcroft is sparsely populated, the village population has been steadily increasing since 1990. Otero County has seen a population increase since 1980. As of 2000, the county of Otero has increased to 62,298 an approximate 20 percent increase from 1990. The population in the analysis are aging and becoming more racially diverse, with higher educational attainment and increasing per capita incomes.

Table 4. Population data for Cloudcroft, Otero County, and New Mexico from 1980 to 2030

	Historical			Projected		
	1980	**1990**	**2000**	**2010**	**2020**	**2030**
Cloudcroft, NM	---	636	749	768[1]	---	---
Otero County	44,665	51,928	62,298	67,018	70,508	73,348
New Mexico	1,303,303	1,515,069	1,819,046	2,112,986	2,383,116	2,626,553

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Projected calculations by: UNM BBER
[1] The 2010 population data for Cloudcroft, NM is provided by the Cloudcroft Chamber of Commerce from the following website: http://www.cloudcroft.net/village_information/
---: No data available

Environmental Justice

Regulatory guidance for the evaluation of environmental justice includes both Executive Orders 12898 and 13045. Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations—states "…each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States… (U.S. 1994)."

Executive Order 13045 - Protection of Children from Environmental Health Risks and Safety Risks - addresses the vulnerability and sensitivity of children stating, "…each Federal agency shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks (U.S. 1997)."

The Council on Environmental Quality (CEQ) defines a minority as individuals belonging to one of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (CEQ 1997). The Apache Pit proposed expansion site is located within Otero County, 2 miles west of the village of Cloudcroft. In 2000 Otero County comprised of 49 percent White (non-Hispanic), 22 percent Hispanic, 3 percent African American, 5 percent American Indian, 1 percent Asian or Pacific Islander and 13 percent of individuals identified as other or two or more races (see table 5 below). Otero County includes the Mescalero Apache tribe and shares the northern border of the Sacramento Ranger District.

Table 5. Otero County Census Data- 2000[1] and Per Capita Income

Otero County	White (Non-Hispanic)	Hispanic	African American	American Indian	Asian or Pacific Islander	Other (2 or more races)	Total
1990	33,268 59%	12,380 22%	2,755 5%	2,984 5%	966 2%	3,910 7%	56,263 100%
2000	34,728 49%	20,033 28%	2,440 3%	3,614 5%	810 1%	9,515 13%	71,140 100%
Source: U.S. Decennial Census Bureau, Decennial Census, 1990 & 2000. Percentage calculations done by UNM-BBER.							

Otero County	Per Capita Income	Persons Below Poverty	% Persons Below Poverty
1989	$8,136	8,404	16%
1999	$14,345	11,737	19%
Source: U.S. Census Bureau, Decennial Census, 1990 & 2000. Calculations done by UNM-BBER. Note: The poverty line is the federal established poverty level. Per capita income is in 2000 dollars.			

Economic Conditions

Rural economies are more dependent on agriculture and other land uses that involve extraction from the forest lands (e.g., grazing, wood gathering, piñon harvesting, etc.), management decisions could have lasting impacts on the wealth and well-being of certain populations (UNM BBER pg. 25 2006). The village of Cloudcroft and the site of the proposed Apache Pit expansion are located in rural Otero County.

The Apache Pit managed by Batte Enterprises is a small family owned business that employs five to six employees (see Table 6). The proposed expansion would not add any additional job opportunities.

Table 6. Total Employment for Batte Enterprises, 2007-2009

2007 – 2009 Total Employment	
Year:	**# of Employees:**
2007	5
2008	5
2009	6

Table 7 shows the material sales from Batte Enterprises. The following are the types of products/material at the sale price per ton: base course ($7.50), clean rock ($10.00), 3”minus ($7.50), pit run ($6.50), rip rap ($20.00) and fines ($10.00). From 2007 to 2009 there was an increase in overall material sale of the various products and materials.

[1] Executive Order 12898, a low-income population is determined using annual statistical poverty thresholds from the U.S. Census Bureau (CEQ 1997). Estimates from 1999 indicate that 19 percent of the total population is below the poverty threshold. The percentage of children 18 and under in Otero County is 26.4 percent in 1990 and in 2000 that number decreases to 24.3 percent.

Table 7. Material Sales for Batte Enterprises, 2007-2009

2007 – 2009 Material Sales	
Year:	**Material Sales:**
2007	$396,538
2008	473,633
2009	572,505

Batte Enterprises offers a variety of services in addition to the sale of material and products. The pit supplies the surrounding area with "base course and clean rock for various building projects or maintaining existing roads." (http://www.cloudcroft.net/business_directory/contractors/).

Alternative 1 (No Action)

Direct and Indirect Effects

Under the Alternative 1 - No Action, current management plans would continue to guide operation of the pit. The proposed gravel pit expansion would not be authorized. Alternative 1 - No Action would mean the removal of sand and gravel could continue under the existing Mineral Use permit until the pit reaches the authorized boundary approved in 2006 (see map Figure 2).

Current management means the existing operator would continue to obtain mineral use permits as needed. These permits would be issued until the authorized pit boundary is reached at which time the pit would close.

Alternative 1 - No Action would eventually put a family-owned and operated business out of business in less than 5 years. The pit would no longer support local sand and gravel needs and the cost of these materials would increase for the local community because these materials would then need to be hauled a very long distance, uphill, on a dangerous mountain road.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The allowable pit mining area boundary would be expanded up to 18 acres to the east and south of the existing pit area (see map Figure 3) to allow for future mining.

Present and future Mineral Materials Permits for the gravel pit would be authorized by the Plan of Operations, which incorporates a reclamation plan.

As part of the Plan of Operations, reclamation would be implemented that would leave a final pit configuration with slopes of 3:1 (3 horizontal to 1 vertical) and would be reclaimed with appropriate vegetation and erosion control features. To insure reclamation is performed, an appropriate bond would be collected from the present and any future pit operator(s).

A connected action would be to approve the removal of existing timber on lands affected by the pit expansion. The timber would be sold as appropriate and per regulations. Temporary roads of less than ½ mile may be needed to remove any timber.

Alternative 2 – Proposed Action would allow the current permittee to continue to own and operate their infrastructure out of Apache Pit for a period of up to five years. The local economy would benefit from the income that is generated by the pit and its operation and the community would reap the benefits of having a local and convenient source of sand and gravel. Under Alterative 2 the pit would be better managed by the Forest Service by having an approved plan of operations. The working relationship with the permittee and the Forest Service would improve due to the relieved stress to the permittee not knowing from year to year if they would have a place to run their business and if their sons would have a future with the pit.

Cumulative Effects

Effects would include the need to move Little Apache Trail #124 due to the expansion of the gravel pit. The gravel pit would double in size and a larger surface area would be taken out of the Forested component of the Lincoln National Forest. The area is classified as Recreation Opportunity Spectrum (ROS) Roaded Natural (RN) and it would remain RN with any of the chosen alternatives.

Other effects may include a perception of a non-competitive mining use operating on the National Forest. The proposed action may also be perceived as non desirable place to recreate. The trees would be removed of all the vegetation and organic soils would be displaced until the area is rehabilitated back to its most natural environment. The pit area may never fully return to its natural state and might always look like a sand and gravel operation.

Cumulatively, the surrounding area may benefit from the expansion of the Apache Pit project by the use of the sand and gravel pit in close proximity to the Village of Cloudcroft.

The No Action and Proposed Action Alternatives have no potential impacts or would not contribute incrementally toward cumulative impacts on the minority and low-income populations, as well as children, on a county basis. Therefore, any potential impacts to environmental justice considerations would be relatively small and immeasurable.

Minerals, Lands and Recreation

Existing Condition

Visitors come from throughout the Southwestern United States and from Mexico to enjoy the amenities offered on the Lincoln National Forest. Recreation opportunities in the immediate vicinity of the analysis area include dispersed campsites, and over 190 miles of maintained system trails, 1033 miles of road open for motorized recreation.

This area was used by the Highway department from 1974 until 1989 for Highway construction around the Village of Cloudcroft. Prior to 1974 it appears that the pit was used by the public for rock, sand and gravel and also as a dump. In 1989 the State Highway Department filed for another permit. There are no records of the State Highway Department obtaining another special use permit. Between 1987 and 1989, Batte Enterprises, was operating in the pit under the State's Special Use Permit. In 1989 when the State's permit expired Batte Enterprises bought their first Contract for the Sale of Mineral Materials and then took over full operations as a source of sand and gravel. Batte Enterprises has been coming in 3-4 times a year obtaining a mineral materials permit for 10,000 cubic yards of sand and gravel each time.

The pit continues to be operated under a Contract for the Sale of Mineral Materials. Recreationalist are currently using Little Apache Trail #124 for both hiking in the summer and snowshoeing as well as cross country skiing in the winter. There are several non-recreation special uses such as two buildings, a crusher, a weigh station, a gate and a sign that is associated with the operation of the pit. There is also a special use for a utility corridor both through the pit boundary as well as outside the entrance to the pit that is held by Otero County Electric Cooperative.

Alternative 1 (No Action)

Direct, and Indirect and Cumulative Effects

Under Alternative 1 - No Action, current management plans would continue to guide operation of the pit. The proposed gravel pit expansion would not be authorized. Alternative 1 - No Action would mean the removal of sand and gravel could continue under the existing Contract for the Sale of Mineral Materials until the pit reaches the authorized boundary approved in 2006 (see map Figure 2.

Current management means the existing operator would continue to obtain mineral materials permits as needed. These permits would be issued until the authorized pit boundary is reached at which time the pit would close.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Under Alternative 2 Proposed Action the allowable pit mining area boundary would be expanded up to 18 acres to the east and south of the existing pit area (See proposed action map Figure 3) to allow for future mining. Present and future Mineral Materials Permits for the gravel pit would be authorized by the Plan of Operations, which incorporates a reclamation plan. As part of the Plan of Operations, reclamation would be implemented that would leave a final pit configuration with slopes of 3:1 (3 horizontal to 1 vertical) and would be reclaimed with appropriate vegetation and erosion control features. To insure reclamation is performed, an appropriate bond would be collected from the present and any future pit operator(s).

A connected action would be to approve the removal of existing timber on lands affected by the pit expansion. The timber would be sold as appropriate and per regulations. Temporary roads of less than ½ mile may be needed to remove any timber.

Little Apache Trail #124 would be re-routed for safety reasons due to the expansion of the mine. Re-routing this trail would keep users further away from the gravel mining operations. The mine would double in size and a larger surface area would be taken out of the Forested component of the Lincoln National Forest. The area is classified as Recreation Opportunity Spectrum (ROS) Roaded Natural (RN) and it would remain RN with any of the chosen alternatives.

The indirect effects may include a perception of a non-competitive mining use operating on the National Forest. The proposed action may result in an area that may be perceived as an undesirable place to recreate. The trees would be removed and all of the vegetation and organic soils would be displaced until the area is rehabilitated back to its most natural environment. The

pit area may never fully return to its natural state and might always look like a sand and gravel operation.

Cumulative Effects

Cumulative effects include the surrounding communities benefits from the use of a sand/gravel pit.

Hydrology - Watershed Resources

Existing Conditions

Apache Pit is located in the Lincoln National Forest off of US Highway 82 off of NFSR 5589. The project area is located in Management Area 2H (Upper James).

The pit currently provides a source of salable common variety of mineral materials and has been operating for 16 years. The mineral material permit allows for 10,000 yards of material at a time. Apache Pit supplies most of the material in the community and nearby area. Currently the permittee has an expired Special Use Permit for one structure on site and the pit has been operating without a Plan of Operations and without a Minerals Management Permit. The operator is aware of numerous regulatory requirements that are needed to meet the regulatory requirements in regards to surface and groundwater quality and air quality.

Soils

Soils in Apache Pit are Pachic Udic. Soils are a deep cobble or gravely loam with a moderate to high erosion potential with steep slopes.

Table 8. Apache Pit Soil Types

MAP UNIT	SLOPE	PHASE1	SOIL_DEPTH	VEG_TYPE	Acres	Percent
0290A	0-15	Very Cobbly Loam	MODERATE DEEP	MC - Aspen	6	9.8%
0291A	16-40	Very Cobbly Loam	MODERATE DEEP	Mixed Conifer	16	27.0%
0292A	41-80	Deep Gravely Loam	DEEP	Mixed Conifer	37	63.2%

Drainages

Little Apache Creek parallels NFSR 5589 and connects to James Canyon. James Canyon joins into the Rio Peñasco which is an impaired stream in the State of New Mexico 2008-2010 CWA 303(d) &305(b) Integrated Report. The primary cause of impairment is sedimentation and siltation. One of the probably sources is from highway, road and bridge runoff that is not related to construction.

There are wild and scenic eligible waters in the Upper Rio Peñasco Watershed. The project has no impact to these waters because they are further upstream from where James Canyon merges into the Rio Peñasco.

Water Quality

Sedimentation and Siltation Problems

The road NFSR 5589 leading to the barrow pit is a steep road with a 5-13 percent grade. The road is located in the Little Apache drainage which is intermittent. The road has heavy traffic to include hauling trucks filled with material. This leads the road to needing constant maintenance. The road NFSR 5589 road has two side ditches on both sides of the road way. The impact from water draining down the two side ditched is increasing the width of the road and sedimentation from the runoff in the side ditches is visible. The operator has attempted to create catchment basins in-order to slow the water down to prevent sedimentation. The operator also chemically treats that road with magnesium chloride to prevent dust and sedimentation caused by the heavy traffic.

Apache Pit currently has two settling ponds on site. These settling ponds trap storm water that has picked up sediment or water used to wash aggregate. The operator has not had any difficulty maintaining the settling ponds. There is one main settling basin located on the north side of the pit. The pit is sloped so that the water would run into the sedimentation pond. There is a smaller sedimentation pond located near the fuel storage tank. The operator cleans out the settling ponds once to twice a year and has not experienced much runoff from the sedimentation basins. The sedimentation ponds have not been designed to any particular storm event.

There are side slopes along the road leading to the pit and near the gravel pit operation that currently have high erosion potential. These sites are lacking vegetation, rock, or woody material to hold the soil down.

Groundwater - Hazardous Storage

Currently the operator stores 250 gallons of fuel. The main concern is that the operator does not have spill containment below the barrels, to protect the area if the barrels should leak. This would prevent contamination into the ground or surface runoff.

The base elevation for Apache Pit for the expansion is 8670 feet. The groundwater table contours from the New Mexico State Engineers shows that the water table surrounding the project area ranges from 8300 to 8400 feet in elevation. These contours were generated from available data and additional verification may be necessary.

Findings show that sand and gravel extraction increases the pollution potential of groundwater. Conductivity, hardness, bicarbonate, nitrate, sulphate, chloride, silicon acid and calcium are at higher levels than their natural state (Hatva 1994). Gravel pits lower the depth between the surface and the groundwater and this can impact water quality. Soils clean the water as it seeps into the ground. If findings indicate that the groundwater is being impacted then a geo-synthetic liner that prevented the infiltration of water may later be determined necessary. It is unlikely that this would be the case since the depth to the water table more likely would be greater than two hundred feet. There are no known wells within 1,000 feet of the site.

Municipal Water Systems

There are two municipal water systems that reside in the Upper Rio Peñasco Watershed. It is unlikely that the gravel operation would impact the municipal water systems. One is the Chippeway Park Water System which is located in the Cox drainage network and is not

influenced by James Canyon Creek drainage. The other is the Mayhill Water Supply Company which is located near James Canyon Creek. Findings have shown sand and gravel operations influence on water quality caused by sedimentation ponds can impact an area up to a distance of 1 km (0.62 miles) (Hatva 1994). The Mayhill water supply is located more than three miles away.

Alternative 1 (No Action)

Direct and Indirect Effects

Under Alternative 1 – No Action erosion on site would continue without additional best management practices to reduce the effects of activity. Soil would be impacted from heavy traffic and rock quarry operations would continue. Air quality would be impacted by rock quarry operations.

Cumulative Effects

Erosion would continue to impact the area causing increased road maintenance and sedimentation in surface water runoff from the pit. The landscape would continue to be altered.

Effects Relative to Issues: Sedimentation may impact the water quality from surface runoff.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Under Alternative 2 - Proposed Action the gravel pit would continue operation and benefit the community reducing the impact on the land by improving operational procedures by having a Storm Water Prevention Plan. Erosion control BMP's would reduce sedimentation in surface runoff. Air quality would be impacted by rock quarry operations.

Cumulative Effects

Highly disturbed areas at the site would have less erosion potential. Operational procedures would reduce sedimentation. Road maintenance would be reduced. The local landscape would be altered.

Effects Relative to Issues: Gravel Pit Operations would benefit the community and would operate in a way to reduce its impact on soil erosion and water quality.

Additional Mitigation/Environmental Protection Measures

A full list of Project Design Features is in Chapter 2; however the discussion below gives additional details about the needs for those Project Design Features and how they related to the hydrology resource area.

Erosion Control Options for the Road

Currently the road 5589 has two side ditches. The road was originally designed to have one side ditch. The runoff has created another side ditch since there is no way for the water to travel across the road. It is recommended that the road incorporate cross drains. Since there is heavy

traffic and the road is steep it would be advisable for the road to have culverts. The road would need to be built up so that it not the channel which it currently is.

The side ditch would need to be sized appropriately to the drainage site. The ideal ditch should be designed so that they are self cleaning and discharge onto nearby vegetated areas through tail out (lead off ditches) ditches. Ditches should be one to two feet below the road base and at a minimum two feet wide to disperse flow and slow velocity. The top of the ditch should have the ground protected with vegetation and the ditch armored with rock, concrete or grass and a berm protected with grasses (Keller et. al. 2003). The ideal spacing would be 145 feet for the thirteen percent grade and 203 feet for the five percent grade for gravelly soils (Copestead 1998). Rock ditch dams can be used to redirect water towards surface cross drains.

Sedimentation (Settling) Ponds

Sedimentation (settling) ponds should be sized appropriately to maintain the water on site to allow infiltration into the ground to prevent runoff that can contribute to soil erosion and sedimentation in water runoff.

Disturbed Areas

Erosion can be reduced by installing sediment control structures where needed to slow or redirect runoff and trap sediment until vegetation is established. Sediment control structures include windrows of logging slash, rock berms, sediment catchment basins, straw bales, brush fences, and silt fencing. Cut and fill slopes, silver fills, upland barren areas, or gullies can be stabilized with brush layers, rock structures with live stakes, vegetative contour hedgerows, wattling, or other biotechnical measures (Keller et al. 2003).

Reseeding may be necessary to establish vegetation. Terraces may be needed to allow vegetation to grow. Reseeding can be accomplished be seeding and mulching or a biodegradable fabric can be used. Cut and fill slopes, silver fills, upland barren areas, or gullies can be stabilized with brush layers, rock structures with live stakes, vegetative contour hedgerows, wattling, or other biotechnical measures (Keller et. al. 2003).

Timber Vegetation Resources

Existing Condition

The Proposed Apache Pit expansion area was part of the Ranger Timber Sale, which was logged in 1992. The area was divided into two cutting units. The upper unit was an un-even aged cut to approximately 150 BA, completed by means of mechanized ground-based logging. The lower unit was an over-story removal down to 12” DBH. This was accomplished through skyline cable logging. Due to the slope being greater than 45%, ground-based removal was not considered on the lower unit.

There have been no further silvicultural treatments in the area since the Ranger Timber Sale in 1992. The current Apache Pit permittee is allowed to remove and sell timber from the current, designated pit expansion boundary, through personal fuelwood permits obtained through the Sacramento District Ranger Office.

Alternative 1 (No Action)

Under the No Action Alternative, no silvicultural activities are proposed. The current permittee purchases personal fuelwood permits, as needed, for removing trees within the authorized expansion boundary, approved in 2006.

Direct, Indirect, and Cumulative Effects

No direct, indirect, or cumulative effects are expected. The area would remain classified as suitable timber. No other treatments would be proposed for the project area.

Alternative 2 (Proposed Action)

The proposed expansion of the Apache Gravel Pit would encompass up to 18 acres for timber harvest and removal. All timber shall be removed by the permittee, through permits and/or contracts issued by the Sacramento Ranger District Office. The timber shall be removed as required for the gradual expansion of the gravel pit. The permittee would remove the timber, in accordance with the USDA Forest Service. The operator shall comply with all USDA Forest Service rules and regulations (FSM-2400) as well as any imposed seasonal restrictions.

Erosion control is an important factor, especially on steep slopes; therefore all timber should be left standing until the removal is necessary for pit expansion.

Direct Effects

The direct effects of the proposed action would result in all timber being cut and removed from within the pit expansion boundary, over time.

Indirect Effects

An indirect effect of the proposed action is the re-classification of this land as non-suitable timber (FSM-2400), due to all suitable timber being removed from the pit expansion boundary, over time.

Cumulative Effects

The cumulative effects of the proposed action are that all vegetation, including trees, shall eventually be removed as the gravel pit is gradually expanded. The area boarders a Mexican Spotted Owl PAC, so no future treatments are anticipated in this area. Other removal could include the removal of hazard trees along the Highway 82 corridor.

Wildlife, Fish and Rare Plants

Introduction

The purpose of this section is to disclose how the issuance of a Special Use Permit (SUP) for sand and gravel removal at Apache Pit might affect federally protected wildlife, fish, and plant species on the Sacramento Ranger District (RD) of the Lincoln National Forest (hereafter, the Lincoln, LNF, or Forest), Otero County, New Mexico. The scale of analysis or the area in which effects are addressed is an important factor in assessing direct, indirect, and cumulative effects.

Site Visit and Surveys

On 6/10/2010, surveys were conducted on the 18 acres that may be disturbed due to the proposed action. Additionally, on 8/24/2010 another site visit was made that included survey areas outside of the 18 acres, outside of the proposed action but still within the project area. On both visits, visual surveys for notable trees, snags, and plants were conducted and wildlife usage and signs were observed. Structural components of the habitat were also noted.

Existing Condition

Vegetation

The following vegetation information was derived from the FS Terrestrial Ecosystem Unit Inventory (formerly Terrestrial Ecosystem Survey) data. The vegetation or habitat types on National Forest Service lands within the proposed action area are represented in Table 9.

Table 9. Proposed action vegetation breakdown.

Vegetative or Habitat Types	Approximate acreage
Mixed Conifer-Aspen	4
Mixed Conifer	13
Interspersed Meadow	1

Remaining acreage not directly affected within the project area consist of mixed conifer and some meadow vegetation types.

Streams: Little Apache Creek is the only intermittent stream near the project area. It occurs at the extreme western edge of the project boundary and is likely flowing only during snowmelt or high precipitation events. No riparian vegetation has been noted within the project area.

Springs: No springs are found within the project area.

Fish Species: No fisheries resources are found within the project area or within the Apache Pit zone of influence. Further consideration of the fisheries resource is not relevant, given the scope of this project.

Forest Plan and associated standards and guidelines

Any action that takes place on the LNF must fall within the Standards and Guidelines of the Lincoln National Forest Land and Resource Management Plan (LNFLRMP). It gives direction to the forest in how it should manage forest wildlife and plant habitat. The following information is included in the LNFLRMP to give management direction for wildlife and plant habitat throughout the LNF:

- Provide for a diversity of plant and animal species through improved habitat management.
- Provide for the improvement of habitat for threatened and endangered species to meet the goals and intent of the Endangered Species Act of 1973.

- Protect and enhance riparian habitat consistent with riparian area management policy set forth in the Regional guidelines.

The proposed project area is entirely within one Lincoln National Forest Land and Resource Management Plan Management Area, designated as 2H (Upper James), and within one 5th Code Hydrologic Unit (watershed), Upper Rio Peñasco ((p.107 Forest Plan as amended)). The primary emphasis in Management Area 2H is developed and dispersed recreation, wildlife habitat, and timber. Wildlife habitat improvements include openings, vegetation management, prescribed burning, water developments and fences to benefit game and non-game animals. Timber would be intensively managed to produce sawlogs and fuelwood, and to prevent losses caused by insects and diseases.

The following information from the 2H Upper James Management Area gives the following standard and guideline for wildlife and plant management:

- Structural and nonstructural habitat improvements include openings, vegetation management, prescribed burning, water development, and fences to benefit game and non-game animals

- A Threatened and Endangered plant would be protected

Management Indicator Species (MIS)

The effects on wildlife species would be determined, in part, by using an "indicator species". These selected Management Indicator Species (MIS) would be addressed due to having a primary and direct association with a particular habitat, hereafter "Key Habitat Factor", that also reflects general habitat types needed by other species occurring within the same or similar habitats. Indicator species are included in this analysis (See Table 10 below) if their habitats are likely to be present within the proposed project area and may be affected by the proposed action alternative. Use of an indicator species approach to assess impacts of proposed projects is consistent with the direction in the Forest Plan.

The evaluation of each MIS species found within this document is tiered to the 2006 LNF MIS Report and Environmental Impact Statement (EIS) for the Forest Plan. All MIS habitat on the Forest was analyzed utilizing TES vegetation data. Forest level MIS maps references within this project analysis are found in the 2006 LNF MIS Report.

Occurrence within the project area of neo-tropical migratory bird species (NTMB) listed as "highest priority partners in flight (PIF) migratory bird species" would be reviewed and assessed. MIS and PIF key habitat factors may overlap, so assessment or mitigations associated with one may also cover an associated species.

Table 10. MIS on Sacramento Ranger District

Species	Ecosystem Represented	Key Habitat Factor (KHF)	Selection Justification
Rufous-Crowned Sparrow	Desert Shrub	Brushy Mountain Slopes	Ecosystem and KHF not represented
Eastern Meadowlark	Gramma Galleta Grassland	Open weedy grasslands	Ecosystem and KHF not represented

Pygmy Nuthatch	Ponderosa Pine	Snags and Large Trees	Ecosystem and KHF not represented
Hairy Woodpecker	Mixed Conifer	Aspen and Aspen Snags	Will be addressed in detail
Mexican Vole	Mixed Conifer	Mesic Mountain Meadows	Will be addressed in detail
Elk	Mixed Conifer	Open mixed conifer and mountain meadows	Will be addressed in detail
Mule Deer	Woodland	Shrub cover and browse species	Ecosystem and KHF not represented
Oak (Plain) Titmouse	Woodland	Trees with naturally occurring cavities	Ecosystem and KHF not represented

HAIRY WOODPECKER (*Picoides villosus*)

This is an indicator species for snags in aspen habitat with mixed conifer. The area for analysis within this project is mixed conifer and aspen stands with an emphasis on at least one snag per acre.

General Ecology

Hairy woodpeckers prefer aspen forest for nesting and foraging. However, they also utilize mixed conifer forests. Snags greater than 10" diameter at breast height (dbh) found in aspen or mixed conifer are preferred. They prefer the dead or dying parts in live trees, especially where fungal heart rot has softened the heartwood. These woodpeckers primarily feed on insects in dead or diseased trees.

Historic Information

It is likely that the relatively severe logging that occurred on the Lincoln in the early 20th century and presumably within the analysis area produced some ideal conditions for aspen to grow. More recently it is thought that the aspen component is decreasing within the area, because small fires are not allowed to create sufficient new habitat. Another issue for aspen establishment is the increase of browse animals, which reduces the amount of regeneration. Past management activities within mixed conifer forest has also reduced the amount of optimal habitat that the hairy woodpecker utilizes.

Current Habitat Description

According to the 2006 Lincoln National Forest MIS Assessment Update, there are approximately 217,008 acres of mixed conifer habitat and aspen on the Lincoln National Forest, but there is likely a downward trend for this habitat type. The assessment used this habitat type to analyze the viability of this species. According to the Forest stand database and field surveys, there is important mixed conifer or aspen situated immediately within or around the project area. Snags greater than 10" are present within the project area.

Determination of Effects

The following habitat factor would be analyzed: maintenance or enhancement of aspen or mixed conifer habitat with one snag per acre greater than 10"dbh.

Alternative 1 (No Action)

Alternative 1 – No Action would minimally change the existing habitat conditions for this species due to <1 acres of tree removal. Regeneration of aspen associated with vegetation treatment of mixed conifer would be unlikely to take place under this alternative, as the soil and bedrock would be removed.

Direct Effects

There would be loss of foraging and nesting habitat because of a near-permanent loss and recruitment of nesting and foraging trees.

Indirect Effects

Nesting and foraging activity trends may be slightly altered tree removal. Alternative 1 – No Action would not maintain or create habitat for hairy woodpecker in the project area.

Cumulative Effects

Timber projects, previous mining, and other activities mentioned in the document introduction add to the cumulative effects to this species by reducing the amount of viable habitat it uses by roughly 10 acres. According to the 2004 Lincoln National Forest MIS Analysis, 83,332 (99% mixed conifer and 1% aspen) acres of mixed conifer and aspen on the LNF have been impacted by natural or man-made activities. The only known foreseeable projects are associated with state road maintenance and Forest trail maintenance.

Determination

Alternative 1 No Action may add effects to a documented (Lincoln National Forest MIS Analysis) negative population trend for hairy woodpecker, specific to the Sacramento Ranger District. Over the proposed action area, the effects associated to the hairy woodpecker would be long term. Alternative 1 – No Action would not contribute towards an upward population trend or healthy, optimal habitat conditions for the hairy woodpecker in the future.

It is my determination Alternative 1 – No Action would reduce nesting and foraging habitat within the project area and the previously mined area on a limited spatial scale. Alternative 1 No Action would directly prevent tree growth and indirectly prevent the creation of optimal habitat. Based on the 2006 LNF MIS Report, Alternative 1 – No Action may slightly contribute to a downward trend but would not alter viability standards for the species.

Alternative 2 (Proposed Action)

Alternative 2 - Proposed Action would remove approximately 18 acres of mixed conifer from the project area, some of which is suitable habitat for requisite nesting and foraging needs of the species. There is no considerable aspen in the proposed action area, but some snags and large trees would be lost during implementation. Given the lack of aspen component, no optimal hairy woodpecker habitat would be affected within the project area.

Direct Effects

Timber harvest may remove nests during timber implementation, as all trees would be removed from the next area designated for sand and gravel removal, thus eliminating preferred nesting and foraging trees. All 18 acres of the proposed action would be treated but on an incremental basis, as needed for sand and gravel, over the lifetime of the Apache Pit. The mining treatment would occur over the course of many years (estimated to be 30), by way of bedrock removal. The treatments may alter some nesting and foraging activity.

Indirect Effects

Alternative2 - Proposed Action would indirectly limit forage and nesting opportunities in the long-term. Prey insects seeking foraging opportunities over the proposed action area would have less opportunity to establish. Additionally, there would be no trees left within each harvest area, which may contribute to an avoidance behavior by the species, as cover would be non-existent. The follow-up mining would remove any habitat establishment for the hairy woodpecker as there would be no growth medium for trees. Over the long term, the woodpecker would be unlikely to utilize the proposed action area.

Cumulative Effects

Timber projects, previous mining, and other activities mentioned in the document introduction add to the cumulative effects to this species by reducing the amount of viable habitat it uses by roughly 27 acres. According to the 2004 Lincoln National Forest MIS Analysis, 83,332 (99% mixed conifer and 1% aspen) acres of mixed conifer and aspen on the LNF have been impacted by natural or man-made activities. The only known foreseeable projects are associated with state road maintenance and Forest trail maintenance.

Determination

Alternative 2 - Proposed Action may add effects to a documented (Lincoln National Forest MIS Analysis) negative population trend for hairy woodpecker, specific to the Sacramento RD. Over the proposed action area, the effects associated to the hairy woodpecker would be long term. Alternative 2 - Proposed Action would not contribute towards an upward population trend or healthy, optimal habitat conditions for the hairy woodpecker in the future.

Alternative 2 –Proposed Action reduces nesting and foraging habitat within the project area and the previously mined area on a limited spatial scale. The alternative directly prevents tree growth and indirectly prevents the creation of optimal habitat. Based on the 2006 LNF MIS Report, this project alternative may slightly contribute to a downward trend but would not alter viability standards for the species.

MEXICAN VOLE (*Microtus mexicanus*)

This is an indicator species for mountain meadows. Area for analysis is mesic meadow habitat at elevations above 8,000 feet.

General Ecology

The Mexican vole is a management indicator species for mixed conifer habitats containing mountain meadows. The Mexican vole is also one of the three primary prey sources for the Mexican spotted owl. Voles primarily occupy meadow habitats, but would occupy forested edges

adjacent to meadows as numbers increase and individuals disperse. Pat Ward, previous research scientist with the USDA Forest Service Rocky Mountain Research Station has established a linear relationship between the presence of voles and herbaceous ground cover height. At an herbaceous ground cover height of 2.4 inches, voles are essentially absent from mountain meadows (Ward, 2003).

Historic Information

Previous and current grazing, along with road construction and illegal off-road use through meadows, are the biggest factors affecting vole habitat. The result is the loss of productive meadow habitat through road construction or maintenance. Historically, the meadows were used for road and access to forest treatments. Other historic uses included access to homes, farms, and sawmills built within meadow habitats. Most of these uses have declined in the last several decades except for subdivision access. Rehabilitation work has been accomplished within some drainages.

Current Habitat Description

According to the 2006 Lincoln National Forest MIS Assessment Update, there are approximately 16,428 acres of mountain meadows habitats on the LNF and 11,369 acres on the Sacramento RD. The report used mountain meadow habitat to analyze the viability of this species.

Within the Apache Pit project area there are approximately 3 acres of mountain meadows above 8,000 in elevation. According to the 2006 Lincoln National Forest MIS Assessment Update, the amount of mountain meadow habitat has increased from 1986 (7,511 acres) to 2006 (16,428 acres). However, the analysis finds that quality of habitat is heading in a downward trend.

Determination of Effects

The following habitat factor would be analyzed: foraging, burrowing, and cover habitat for the Mexican vole.

Alternative 1 (No Action)

Alternative 1 - No Action would not change the existing habitat conditions for this species because no treatment or road activity would occur.

Direct Effects

There would not be loss of foraging, burrow, or cover habitat because no treatment would occur. Burrowing and foraging activity would not be altered.

Indirect Effects

Burrowing activity trends would not be altered. Alternative 1 – No Action would indirectly prevent creation of optimal habitat by virtue of the primary access of the Apache Pit road and associated facilities occurring within a previous meadow area.

Cumulative Effects

Timber projects, off-road use, and other activities mentioned in the document introduction add to the cumulative effects to this species by reducing the amount of viable habitat it utilizes. The only known foreseeable projects in the area that may cumulatively affect voles are associated with Forest trail maintenance.

The access road from Highway 82 and current Apache Pit location may have some cumulative effect, as it was partially former meadow habitat, but extremely limited in scope, compared to available habitat across its range.

Determination

It is my determination Alternative 1 – No Action does not directly reduce sufficient burrowing, foraging, and cover habitat for the Mexican vole within the project area. However, it indirectly prevents the creation of Mexican vole habitat within the project area. Based on the 2006 LNF MIS Report, Alternative 1 – No Action would not alter viability standards.

Alternative 2 (Proposed Action)

Alternative 2 - Proposed Action disturbs less than one acre of suitable habitat by rerouting a recreation trail across a narrow meadow.

Direct Effects

Alternative 2 - Proposed Action would remove burrowing, cover, and foraging habitat due to permanent presence of a trail. Alternative 2 - Proposed Action may alter existing burrows and would slightly fragment an area of contiguous meadow habitat. There may be some direct mortality associated with the construction of trail in the meadow.

Indirect Effects

Trail creation would introduce soil disturbance and cause vegetative cover loss, thereby indirectly causing species avoidance of the trail in the short term. As the trail is for recreation, some avoidance behavior may also develop due to foot traffic through the meadow habitat.

Cumulative Effects

Timber projects, illegal vehicle off road use, and other activities mentioned in the document introduction add to the cumulative effects for this species by reducing the amount of viable habitat it utilizes. The only known foreseeable projects are associated with Forest trail maintenance, which may incrementally add to direct and indirect effects in the same way as previously stated.

The access road from Highway 82 and current Apache Pit location may have some cumulative effect, as it was partially former meadow habitat, but extremely limited in scope, compared to available habitat across its range.

Determination

Alternative 2 - Proposed Action would leave sufficient burrowing, foraging, and cover habitat for Mexican vole. Alternative 2 - Proposed Action disturbs more Mexican vole habitat than the no action alternative, but direct effects are spatially and temporally minimal, with any indirect

avoidance effects not likely to affect behavior that would be detrimental to individuals over the long term. Based on the 2006 LNF MIS Report, Alternative 2 - Proposed Action would not alter viability standards.

ELK (*Cervus elaphus*)

This is an indicator species for mixed conifer habitat, the pre-dominant habitat type within the project area.

General Ecology

Elk currently occupy the majority of the Sacramento Ranger District during different times of the year. During the winter months, elk would winter within the lower elevations within pinyon-juniper woodlands and up to the ponderosa pine forest type. The recommended forage/cover ratio for elk is 60% forage to 40% cover. Open road densities are recommended to be no more than 1-mi/section. Within the area meeting the recommended percent of cover, at least 25% of that should be thermal cover. During mild winters with little snowfall, winter use may occur at the higher elevation of the mixed conifer zone and within old wildfire areas. The elk summer range is primarily the high elevation mixed conifer zone above 7,500 feet. Foraging during the summer months occurs within the high elevation mountain meadows dominated by Kentucky bluegrass (Toweill, D.E. and J.W. Thomas, 2002). During the fall and winter, elk consume greater amounts of forbs and shrubs, but prefer grass when available (Morgantini and Bruns 1984, Thomas and Bryant 1987).

Historic Information

Elk use in the analysis area may occur year round, depending on seasonal variations in temperature and precipitation. Much of the use depends on the amount of snow and when it occurs.

Elk populations have been increasing in the recent past (last 20 years). Past actions have left the area with sufficient open-canopy habitat for forage and dense-canopy habitat for cover to maintain higher elk numbers than specified in the past (Lincoln National Forest MIS Assessment Update, 2006).

Current Habitat and Population

Elk populations on the LNF utilize a wide range of vegetation component types throughout the year. As of 2006, the Lincoln National Forest contained 213,702 acres of mixed-conifer, with approximately 156,470 acres occurring on the Sacramento Ranger District. Less than .03% district-wide habitat for this species is found within the project area, but sign is present, indicating that the habitat is at least intermittently occupied. According to the 2006 LNF MIS Report, the majority of habitat types that elk would utilize on the LNF are either considered stable or trending upward. Additionally, the report states that "Based on the best current information, it is the professional opinion of the Forest Biologist that the current habitat trend for elk on the LNF is upward" (Lincoln National Forest MIS Assessment Update, 2006).

Determination of Effects

The following habitat factor would be analyzed: browse and cover availability within the project area.

Alternative 1 (No Action)

Direct Effects

The removal of less than one acre of vegetation would compromise cover and/or forage within that area, with little chance of regeneration in the future. Alternative 1 – No Action would disturb less than .001% of district-wide suitable habitat.

Indirect Effects

The removal of cover and forage would lead mean less resource availability overall. This may slightly tighten distribution of the species, leading to slightly greater competition for resources.

Cumulative Effects

Thinning projects, prescribed fires, and other activities as mentioned in the document introduction add to the cumulative effects to this species by shifting areas of habitat preference with little effect to viable populations. Over the long term, reclamation of the area may produce foraging opportunities for the species.

Determination

Alternative 1 – No Action would not prevent the forest in providing suitable habitat for this MIS, but would slightly decrease cover and forage availability in the area. As of the 2006, the Forest biologist's opinion was that the trend for open-canopy forest was trending upward and population trend for the species was stable, further mitigating any loss of habitat in Alternative 1 – No Action. Viability for this species would not be altered by this Alternative 1 – No Action.

Alternative 2 (Proposed Action)

Direct Effects

Under alternative 2 – Proposed Action cover and forage would be incrementally removed by timber operations within the 18 acres proposed action area, likely causing avoidance behavior during implementation. Over the course of Apache Pit operation, the 18 acres of marginal forest and cover habitat would be removed to the point of non-existence, thereby causing a change in elk movements near or within the project area, as the species seeks to find cover and forage elsewhere. Foraging opportunities may exist after Apache Pit closure and reclamation.

Indirect Effects

Effects of timber removal may indirectly decrease vigor of individuals that have historically and notably relied on the area for its cover or forage resources. This indirect effect would be limited in scope due to the incremental nature of habitat removal. As the proposed action moves forward with the Apache Pit operation, there would be less and less available habitat over time, indirectly causing a shift in distribution of the herd, slightly increasing resource competition and grazing pressure in adjacent areas.

Cumulative Effects

Under Alternative 2 – Proposed Action timber projects, prescribed fires, livestock grazing and other activities as mentioned in the document Introduction, add to the cumulative effects for this species by altering habitat conditions and likely altering species behavior patterns over the long term. Previous timber harvest has not greatly contributed to lack of use, as elk sign was observed within the project area, much of which was part of a timber harvest in 1992. Future reclamation may encourage foraging opportunities within the current Apache Pit area and the proposed action area.

Determination

Alternative 2 – Proposed Action would not prevent the forest from providing suitable habitat for this MIS. Cover would be lost, but forage may be gained after reclamation. As of the 2006, the Forest biologist's opinion was that the trend for open-canopy forest was trending upward and population trend for the species was stable, further mitigating any loss of habitat from Alternative 2 – Proposed Action. Viability for this species would not be altered by this Alternative 2 – Proposed Action.

Alternative 2 – Proposed Action is unlikely to affect the viability of the elk population, due to their seasonal usage, current availability, and trend for this habitat, along with the overall flexibility of the species.

Neo-tropical Migratory Bird (NTMB) Analysis

On January 10, 2001, President Clinton signed Executive Order 13186 placing emphasis on conservation of migratory birds. No agency-wide or LNF policies have been developed to provide guidance on how to incorporate migratory birds into NEPA analysis. Advice from the Regional Office is to analyze effects in the following manner: (1) effects to Species of Concern listed by Partners in Flight; (2) effects to Important Bird Areas (IBAs); (3) effects to important overwintering areas.

Species addressed under the Migratory Bird Treaty Act and Partners in Flight

The Lincoln National Forest lists priority species of concern by vegetation type as established by the Forest Biologist. The Apache Pit operates in one primary vegetation community type, Mixed Conifer (MC), though many bird species may use other vegetation types, along with MC, depending on seasonal requirements. These other vegetation community types include Desert Grassland (DG), Desert Shrub (DS), Cliff/Cave (CC), Pinyon and Juniper woodland (PJ), Ponderosa Pine (PP). Species that may have part or all of their habitat requisites met by MC utilization are listed below (see Table 11). Additionally, the following species were cross-referenced with the Biota Information System Of New Mexico (BISON-M) website, for recorded occurrences in Otero County (http://www.bison-m.org/reports.aspx?rtype=13&category='04',&county='035'). Therefore, this analysis would only address species with historic county occurrences that may utilize the MC vegetation type.

Table 11. MBTA species that may occur in or near the project area.

Species	MBTA (Yes or No)	PIF Priority Species (Yes or No)	Vegetative Type	Ground nesting (GN) or above ground nesting (AGN)
Sharp-shinned Hawk	Yes	No	MC, PP	AGN
Cooper's Hawk	Yes	No	MC, PP	AGN
Northern Goshawk	Yes	No	MC, PP	AGN
Red-tailed Hawk	Yes	No	MC, PP, PJ, DS, CC	AGN
Great Horned Owl	Yes	No	MC, PP, PJ, DS, DG, CC	AGN
Flammulated Owl	Yes	Yes	MC, PP	AGN
Northern Pygmy-Owl	Yes	Yes	MC, PP	AGN
Long-eared Owl	Yes	No	MC, PP, PJ	AGN
Northern Saw-whet Owl	Yes	No	MC	AGN
Mountain Chickadee	Yes	No	MC, PP, PJ	AGN
Red-breasted Nuthatch	Yes	No	MC, PP	AGN
White-breasted Nuthatch	Yes	No	MC, PP, PJ	AGN
Band-tailed Pigeon	Yes	Yes	MC, PP	AGN
Common Raven	Yes	No	MC, PP, CC	AGN
Steller's Jay	Yes	No	MC, PP	AGN
Violet-green Swallow	Yes	No	MC, PP	AGN
Purple Martin	Yes	No	MC, PP	AGN
Whip-poor-would	Yes	Yes	MC, PP	GN
Plumbeous Vireo	Yes	Yes	MC, PP, PJ	AGN
Warbling Vireo	Yes	Yes	MC, PP	AGN
Ruby-crowned Kinglet	Yes	No	MC, PP	AGN
American Robin	Yes	No	MC, PP, PJ	GN
Townsend's Solitaire	Yes	No	MC, PP	GN
House Wren	Yes	No	MC, PP	AGN
Hermit Thrush	Yes	No	MC, PP	GN
Olive-sided Flycatcher	Yes	Yes	MC, PP	AGN
Western Wood Pewee	Yes	No	MC, PP, PJ	AGN
Cordilleran Flycatcher	Yes	Yes	MC, PP	AGN
Red-naped Sapsucker	Yes	Yes	MC, PP	AGN
Downy Woodpecker	Yes	No	MC, PP, PJ	AGN
Three-toed Woodpecker	Yes	No	MC, PP	AGN
Hairy Woodpecker	Yes	No	MC, PP, PJ	AGN
Northern Flicker	Yes	No	MC, PP, PJ	AGN
Brown Creeper	Yes	No	MC	AGN
Orange-crowned Warbler	Yes	No	MC, PP	GN
Virginia's Warbler	Yes	Yes	MC, PP, PJ	GN
Grace's Warbler	Yes	Yes	MC, PP	AGN
Yellow-rumped Warbler	Yes	No	MC, PP	AGN
Red-faced Warbler	Yes	Yes	MC, PP	GN
Painted Redstart	Yes	Yes	MC	GN
Western Tanager	Yes	No	MC, PP	AGN
Chipping Sparrow	Yes	No	MC, PP, PJ	AGN
Dark-eyed Junco	Yes	No	MC, PP, PJ	GN
Black–headed Grosbeak	Yes	No	MC, PP, PJ	AGN
Evening Grosbeak	Yes	No	MC, PP	AGN

Species	MBTA (Yes or No)	PIF Priority Species (Yes or No)	Vegetative Type	Ground nesting (GN) or above ground nesting (AGN)
Red Crossbill	Yes	No	MC, PP	AGN
Pine Siskin	Yes	No	MC, PP	AGN
Wild Turkey	No	No	MC, PP, PJ	GN

Summary of MBTA Effects

Every species and its habitat that was mentioned in Table 11 above have the potential to be affected by the proposed actions associated with Apache Pit. However, nestlings have the greatest mortality potential due to their inability to flush when disturbed. This disturbance would most likely occur during timber removal activities, but some birds may find the substrate suitable for nesting after all vegetation has been cleared for sand and gravel retrieval.

Adult birds would exhibit a flush response when disturbed and should not experience direct mortality, but may experience greater energetic demand by having to re-nest or produce another clutch of eggs. Many birds many attempt to nest again, due to many female birds' adaptive ability to produce another clutch of eggs, should the initial clutch be destroyed.

Gradual habitat alteration resulting in displacement of individuals would be likely, but would occur slowly over time.

Indirectly, noise disturbance during breeding season may also contribute to incidental take of one or more species listed above by way of flushing response that might leave a nestling or fledgling unattended and prone to predation or starvation. However, the likelihood for this to occur would be relatively low, given the small scale of the proposed action and the relative commitment that parent birds exhibit when raising young.

Any take resulting from these actions are expected to be extremely infrequent and are not projected to rise to a level that affects the total population size for any species listed above.

Important Bird Areas (IBA).

The Peñasco Canyon IBA is the closest IBA to the analysis area (http://iba.audubon.org/iba/stateIndex.do?state=US-NM). This project is approximately nine miles from the IBA and is outside of the zone of influence.

Overwintering Areas

The project area may provide wintering habitat for migrant bird species. However, the project area is not recognized as an important over wintering area because concentrations of birds are not known to occur there nor do unique or a high diversity of birds' winter within the area.

THREATENED, ENDANGERED AND SENSITIVE SPECIES

This section provides information on the selection of federally listed plant and animal species for detailed analysis on the Sacramento Ranger District. Species currently listed as federally threatened or endangered, as well as those species which may be candidates for listing by the U.S.

Fish & Wildlife Service (USFWS), were considered. The entire list is available on the official web site (http://www.fws.gov/southwest/es/NewMexico/SBC_view.cfm?spcnty=Otero). This species list was downloaded from the official website on 8/18/2010, and compared with the list of a list of species known to occur on the Sacramento Ranger District. Species listed as Sensitive for the Lincoln National Forest on the Forest Service' Region 3 Regional Forester Sensitive Species (RFSS) List, October 2007, were also considered.

Species Excluded From Detailed Analysis

There are several federally listed species which are not discussed in this document due to lack of presence in the geographical area and/or unsuitable habitat conditions on the Sacramento Ranger District. The following remuneration provides the rationale for excluding species from detailed analysis:

- Species which do not occur on or near the Lincoln National Forest due to the range of the species, lack of habitat, or which only occur on an incidental basis, would not be affected by the proposed action. For this reason they would not be included in a detailed analysis. These species are found in Table 15 in **Appendix A**.

- Species that are not known to occur on or near the Sacramento Ranger District, though they may occur elsewhere on the Forest, would not be affected by the proposed action. For this reason they would not be included in a detailed analysis. These species are found in Table 16 in **Appendix A**.

- Species that are not known to occur on or have habitat within the project area, though they may occur elsewhere on the District, would not be affected by the proposed action. For this reason they would not be included in a detailed analysis. These species are found in Table 17 in **Appendix A**.

- Species may use the project analysis area on an incidental basis, or have minimal amounts of historic habitat, but do not depend extensively upon the area resources for their continued existence. For this reason they would not be included in detailed analysis. These species are found in Table 18 in **Appendix A**.

Species Included for Detailed Analysis

A detailed effects analysis is found below for the following individual species:

Scientific Name	Common Name	Status
Euphydryas anicia cloudcrofti	Sacramento Mountains checkerspot butterfly	SC*
Strix occidentalis lucida	Mexican spotted owl	T**

*SC= USFWS Species of Concern and/or Regional Forester Sensitive Species
**T = currently listed as Threatened under the Endangered Species Act

Sacramento Mountains Checkerspot Butterfly (SMBC)

- Scientific Name: *Euphydryas anicia cloudcroftii*
- Status: Forest Service Region 3 Sensitive/USFWS Species of Concern

General Ecology

This SMCB is a resident Lepidopteran species that primarily utilizes New Mexico penstemom (Penstemon neomexicana) as forage/host plants for larvae and orange sneezeweed (Helenium hoopesii) for nectar-feeding as adults. They are found in meadows and large forest openings. Other life history requirements of the species [e.g. wintering (diapause), egg-laying, or weather shelter] are not specifically known, but are assumed to be within the meadows and large forest openings.

Data Sources, including surveys conducted

The Checkerspot population center is within 2-5 miles of the town of Cloudcroft. Currently, the species has been found up to five miles northeast of Cloudcroft and north to the Mescalero Tribal Lands boundary. The south and west directions remain about two miles from Cloudcroft. Surveys for the adult or larval stages of the butterfly have been conducted from 1998-2010. There are also 10 monitoring plots within vicinity of the project area that have been monitored since 1999 (see Table 12 below). Monitoring of the plots in 2009 showed a general increase of pre-diapause larvae at most sites compared with counts conducted in the previous couple of years, with two sites yielding the greatest number of tents since survey inception.

Table 12. Maximum Number of Tents Identified per Year

PLOT	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	10 Yr Avg. Rounded (Actual)
Yard	6	17	3	13	3	0	0	2	0	0	4 (4.4)
Silver Springs Canyon*	34	5	8	2	4	0	0	3	0	0	6 (5.6)
Spud Patch Canyon	14	3	5	1	0	2	0	3	1	13	4 (4.2)
Pines Campground	34	9	7	6	9	8	5	34	11	60	18 (18.3)
Horse Pasture*	13	6	3	2	1	0	0	4	0	0	3 (2.9)
Cox Canyon	14	6	1	5	8	2	0	3	1	4	4 (4.4)
Deerhead Canyon*	6	6	7	8	11	5	31	3	0	0	8 (7.7)
Sleepy Grass Canyon*	7	11	7	5	3	0	0	2	0	0	4 (3.5)
Pumphouse Canyon	6	1	33	7	0	0	0	0	0	0	5 (4.7)
Bailey Canyon	4	1	0	3	12	2	6	12	9	18	7 (6.7)
TOTAL	**138**	**65**	**74**	**52**	**51**	**19**	**42**	**66**	**22**	**95**	**62 (62.4)**

Affected Habitat Description

Approximately 2 acres of occupied habitat can be found within the entire analysis area. It is split between approximately 1 acres of meadow habitat and 1 acres of travel corridor (along the access road), which consists of some meadow species on side slopes. Monitoring has shown that the

checkerspot utilizes both habitats, though contiguous meadow habitat is where they are more commonly found.

Alternative 1 (No action)

Direct Effects

Approximately <0.5 linear mile of existing road within occupied habitat may be disturbed by any road-blading that might need to occur to access Apache Pit operations. This road leads from US-82 (James Canyon Highway) to the base of Apache Pit and provides habitat connectivity from the highway to the meadow habitat adjacent to gravel operations.

Within this roadside habitat, egg-laying is not known to occur. Historically, adults have used this road intermittently as a travel corridor for feeding and/or mating. Adults may experience some vehicular mortality during the early summer months, but vehicles travelling on the access road would be travelling at a low rate of speed. This should allow most SMCBs in flight to avoid vehicle collisions. During August-September, the potential exists for direct vehicular mortality of moving larvae across the road surface. Both scenarios could cause a reduction in the local population.

During the winter months, a small potential exists for larval mortality and/or disturbance at the road edges by any blading that may occur. However, the chances of Apache Pit operation occurring in conjunction with blading of snow on the access road would be minimal. There should be no other road action that would result in a direct effect.

The access road that leads from Highway 82 was surveyed during late summer of 2009. No forage plants necessary for egg-laying were noted in any area that may be disturbed by blading; therefore, blading that may occur there in the future should not have direct effects on larvae in Alternative 1 – No Action.

Indirect Effects

Disturbance that may be associated with any blading of the access road could provide suitable conditions for New Mexico penstemon to thrive. This plant has frequently been observed in disturbed, well-drained, rocky areas of rich soil that would likely be present at the road edges. This could eventually lead to greater forage plant availability for larvae. However, that same disturbance, as previously mentioned may also directly disturb any larvae that may be present and lead to a reduction in the local population.

Cumulative Effects

The following activities are occurring, or have occurred, within occupied butterfly habitat: exploratory well drilling on Village of Cloudcroft and Forest Service lands. Hunting, hiking, mountain biking, and OHV use that is both legal and illegal. Wildland Urban Interface (WUI) projects (ex. Rio Peñasco I, II, and Sixteen Springs) on the Sacramento Ranger District which are intended to reduce fuel loading and increase watershed restoration.

The majority of the disturbance mentioned above is considered short term. It is believed that areas that have had short term disturbance should return to pre-project conditions relatively quickly. However, there are projects like the Campground Improvement Project (CIP) which create short and long term disturbance to occupied butterfly habitat. The most current project

(2009-present) that may affect butterfly populations involved the renovation of Sleepy Grass Campground. The aforementioned project is still in implementation, along with Sleepy Grass monitoring surveys to assess any impact to the local population.

Monitoring of SMCB populations range wide is currently being conducted to help determine the effects that these projects may have on the species.

Determination

Though there is some marginal meadow habitat found adjacent to the current gravel operation, this habitat has been found to be primarily a travel corridor. Additionally, the general area surrounding the Apache Pit operation is not known to harbor a large population when compared to other surveyed sites.

The spatial and temporal scale of this alternative is limited, based on the disturbance that has already occurred as a result of Apache Pit operations. Any further effects related to this alternative would be unlikely, based on the established disturbance.

Alternative 1 – No Action may impact individual butterflies and/or their habitat but would not likely result in a trend toward listing or loss of species viability.

Alternative 2 (Proposed Action)

Direct Effects

Under Alternative 2 – Proposed Action approximately <0.5 linear mile of existing road may be disturbed by road-blading for Apache Pit operations, which may disturb or cause some mortality to pre-diapause larvae, larvae already in diapause, or post-diapause larvae. To mitigate any potential disturbance, any road improvement areas would be surveyed prior to initiation, but survey error may lead to some direct mortality.

Trail construction that crosses the meadow may disturb larvae or larval tents, thereby leading to mortality within the area of disturbance. Pre-implementation surveys in the areas designated for trail construction would be conducted prior to ground disturbance.

Trail users may also contribute to a local larval population reduction. This might occur from incidental usage of the trail by larvae in search of a forage plants or diapause sites, while a user is occupying that same area. Surveys and relocation may alleviate this effect, but some direct mortality may occur for individuals not located during that survey effort.

Timber removal should not affect the SMCB. Areas of harvest are not currently occupied.

Indirect Effects

Some penstemon or sneezeweed may be directly removed by trail construction, leading to decreased foraging and feeding opportunities for the SMCB. Trail usage, leading to soil compaction, would contribute to very limited potential for plant re-establishment along the trail corridor.

Users may also impact host or nectar plants by foot traffic, leading to a slight decrease in usable plant resources that the species requires for egg-laying or feeding.

Indirect effects to any colonizing populations that may take place should be avoided by the lack of established vegetation after timber harvest. It is very unlikely that either penstemon or sneezeweed would succeed on the harvest site, as topsoil should be removed, immediately following timber harvests (Hydrology Specialist Report, 2010). Additionally, the report speaks to mitigating and eliminating erosion that may be caused due to Apache Pit operations. This should provide greater opportunity for penstemon and thus SMCB egg-laying along the Apache Pit access road.

Well into project implementation, after the authorized sand and gravel removal, a reclamation plan may provide some usable habitat over the entire area where the Apache Pit and associated structures exist. If suitable vegetation, including penstemon and sneezeweed, could be established within the reclamation area, the SMCB could benefit by a net gain of available habitat.

Cumulative Effects

The following activities are occurring, or have occurred, within occupied butterfly habitat: Exploratory well drilling on Village of Cloudcroft and Forest Service lands. Hunting, hiking, mountain biking, and OHV use that is both legal and illegal. Wildland Urban Interface (WUI) projects (ex. Rio Peñasco I, II, and Sixteen Springs) on the Sacramento Ranger District which are intended to reduce fuel loading and restoring watersheds.

The majority of the disturbance mentioned above is considered short term. It is believed that areas that have had short term disturbance could return to pre-project conditions relatively quickly. However, there are projects like the Campground Improvement Project (CIP) which create short and long term disturbance within occupied butterfly habitat. The most current project (2009) that may affect butterfly populations involved the renovation of Sleepy Grass Campground. The aforementioned project is still in implementation, along with Sleepy Grass monitoring surveys to assess any impact to the local population.

Monitoring of SMCB populations range is currently being conducted to help determine the effects that these projects may have on the species.

Determination

The analysis area approximately constitutes less than 1% of occupied habitat on the Sacramento Ranger District. Meadow habitat that would be disturbed due to trail construction is limited, but long-term.

Heavy equipment usage on the main access road from Highway 82 would be unlikely to have any major effects on the SMCB population due to the lack of New Mexico penstemon for larvae, the mobility of adults, and the unlikelihood of slow moving vehicles causing direct adult mortality. Effects associated with any impending road improvements would be mitigated by surveys and relocation of larvae.

Timber harvest areas would not contribute to effects, as vegetation and soils necessary for potential colonization would also be removed.

The net gain of habitat that the SMCB may potentially realize would be a result of optimal soil conditions within the reclamation area. These conditions are arguably difficult to achieve,

therefore this determination can only marginally consider any future establishment of suitable habitat within the reclamation area.

Due to the small scale of occupied habitat found within the analysis area, minimal usage as compared to overall occupied habitat across its range, the relative lack of habitat within the proposed action area, and the mitigation to help prevent direct mortality, project actions would not inhibit species viability in a way that would trend toward listing. Implementation may impact, but is not likely to extensively impact the Sacramento Mountains checkerspot butterfly.

Mexican Spotted Owl (MSO)

- Scientific Name: Strix occidentalis lucida
- Status: Federally listed as Threatened (March 15, 1993) Critical Habitat Designated (August 31, 2004)

General Ecology

The Mexican spotted owl (MSO) inhabits mixed coniferous and pine/oak forests, canyons, desert caves and riparian areas in the Southwest. Major threats cited in the final rule listing the MSO as Threatened include habitat loss due to timber harvesting and risk of catastrophic fire. According to the Final Rule to List the Mexican Spotted Owl as a Threatened Species (Federal Register Vol. 58. No.49) and the MSO Recovery Plan, ponderosa pine and piñon/juniper are not suitable habitat for nesting and roosting unless an owl is actually using the area for nesting or roosting.

Preliminary prey base data being taken on the Lincoln National Forest suggest that the owl utilizes three main food sources: wood rats, deer mice, and voles. Canopy cover and herbaceous ground level components are important prey habitat conditions. Foraging habitat occurs throughout several forest types from pinyon/juniper to spruce/fir. Mixed conifer forests with old growth stands are most commonly used. These forests are dominated by Douglas fir and/or white fir, with understory consisting of coniferous species and broad-leaved species such as Gambel oak, maple, boxelder, and New Mexico locust. These forests are also usually uneven-aged, multistoried, and have a higher percentage canopy closure. The Mexican spotted owl nests and roosts primarily in closed canopy forests or rocky canyons.

Data Sources and Surveys Conducted

Information was taken from the Federal Register Vol. 58. No. 49, Federal Register Vol. 60.No. 108, the Final Recovery Plan dated November 1995, and the Final Environmental Impact Statement for Amendment of Forest Plans, dated October 1995. FS Manual 2670 was also used.

The FWS received a scoping document and responded with a species of concern list. Past district records for occurrence of this species were reviewed. The MSO habitat that would be modified by the proposed action is immediately adjacent to the Little Apache PAC, which has been consistently monitored, and is located immediately east of Little Apache Canyon and the Apache Pit.

Little Apache PAC History

- Management territory R03F08D02-091

- T15S. R12E SEC 31 NE1/4 SW1/4

This MSO site was first located in 1994 by the Kauffman group during the Cloudcroft Land Project survey. Since located the site has been both informally and formally monitored in 1994-1996 and 1998-2010 by Sacramento RD and USFS Rocky Mountain Research Station (RMRS) personnel. See Table 13 for occupancy, reproductive success, and number of young. RMRS continues to integrate this PAC into research for the species.

There is currently one known nest site for this pair, but there are a total of three distinct MSO nesting areas within this PAC.

A management territory was established in 1994 for this site. It was established from aerial photos with ground verification. At that time it was estimated that within a 2,074-acre area, 1,085 acres were suitable, 858 acres were capable, and 131 acres were unsuitable.

In April 1995 a PAC was setup. It was updated in September 1995 and December 2000. Within this PAC, 390 acres are estimated as nest/roost and 211 acres as forage. A 100-acre fire protection was established in July of 1998 using nest data. This core establishment encompasses some previous nest sites but does not surround the 2010 nest location.

Activities occurring within the PAC are hiking, cross-country skiing, and snowmobiling. Adjacent private land is subdividing. The ski run is south of Highway 82. Apache Pit is nearly adjacent to the west side of the PAC, which may be expanding to the PAC boundary in the future. Timber harvest occurred in 1989 and 1992, before the bird was found. The Peñasco urban interface project planned 129 acres of activity within this PAC of which only 55 was completed. All 55 acres was in mixed conifer nesting/roosting habitat. Grazing does not occur because the PAC is in the James Allotment, which currently has no grazing.

Table 13. Monitoring Data on the Little Apache Owl PAC #091

Year	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Occupancy	O	O	A	X	O	O	O	O	O	O	O	O	S	O	S	S	O
Reproduction	U	U	U	X	C	U	N	N	N	C	C	C	U	C	C	U	C
# of Young	X	X	X	X	2	X	0	0	0	1	1	1	X	2	2	X	1

A= Absent, O= Occupied- a pair of birds was confirmed, S = Single owl inferred or confirmed., N= Non Nesting, C= These sites had reproduction confirmed, U= Unknown, ## This was the number of young counted during that year., X= Not Monitored

Affected Habitat Description

The Sacramento District is located within the Basin and Range-East Recovery Unit (RU). The MSO Recovery Plan considers mining and recreation as a minor threat to the owl on the RU, with some forms of timber harvest (primarily even-aged) being considered a major threat contributing to habitat loss. "The present or threatened destruction, modification, or curtailment of its habitat or range" was a factor that contributed to the MSO listing, as stated by the Recovery Plan.

The Basin and Range-East Recovery Unit currently has 146 established Protected Activity Centers (PACs) amounting to approximately 92,443-ac of protected MSO habitat Forest-wide. Of the 146 established PACs within the recovery unit, there are currently 117 (80%) PACs (approximately 72,542 acres) that have been established within the Sacramento Ranger District.

Approximately 100,966 acres on the Sacramento Ranger District were designated as MSO Critical Habitat on August 24, 2004, much of which falls within already designated PACs. No designated MSO Critical Habitat falls within the project area or the Little Apache PAC.

There is approximately 18 acres of "restricted area", mixed conifer habitat found within the proposed action area, immediately adjacent to the Little Apache PAC. The MSO Recovery Plan defines restricted areas as unoccupied, mixed conifer forest types occurring on slopes <40%, harvested within the past 20 years.

The PAC is approximately 625 acres (see Table 14 below). The Little Apache pair is the only known pair within the vicinity of the project that may be affected by the alternatives. No actions would occur immediately within the PAC.

The PAC is found in an isolated area with relatively little human activity. The majority of activities occurring within the PAC involve hiking, hunting, and antler collecting. Grazing does not occur within this PAC. Fire reduction activities do not currently occur within this PAC because wildfire risk within the area has been rated as low.

Table 14. Little Apache Site #R03F08D02-091

Mexican Spotted Protected Activity Center (PAC) Total acres within the PAC is 625 acres	
Forest Type	**Acres**
Mixed Conifer	600
Oak	10
Meadow	7
Aspen	8
Nest /roost	390
forage	211
unsuitable	24
Past Activity	**Acres**
Old burn	19
Vegetation activity	221acres in 1989 Little Apache Sale, 55 acres thin 2001
Open Road	0.0 miles. Highway 82 is 1/8 mile away.
Non-motorized trail	1.8 miles lightly used cross country ski trail
Utility lines	0.0 miles
Closed roads	2.2 miles
Special use in or adjacent to PAC	1 number; Apache Gravel Apache Pit
Uses including private land within 1/4 mile	3 number; village property, 2 private land owners

Analysis of Effects

The following Determination Conditions will be utilized to support how the alternatives may affect the species or its habitat:

A. It is assumed that if the following condition is met, there will be no effect on the species or its habitat:

1) Ground disturbing activities are not within a PAC or any other form of MSO habitat (protected or restricted).

B. It is assumed that if the following condition is met, an alternative may affect, not likely to adversely affect this species or its habitat:

1) The activity will not contribute to loss of habitat and will encourage optimal habitat conditions in the future.

2) The activity will not disturb reproduction.

C. It is assumed that if the following condition is met, an alternative may affect, likely adversely affect this species or its habitat:

1) The activity will contribute to destruction, modification, or curtailment of species habitat or range.

Designated Critical Habitat does not occur within the project area. It is assumed that if the proposed activities do not occur within Critical Habitat, there is no effect to it and that no further analysis is warranted.

Conservation Measures for the Proposed Action

- Project actions would be confined to the project area and would strictly avoid the adjacent protected activity center.
- Apache Pit blasting operations would be prohibited during MSO breeding season (March 1st through August 31st); however, a breeding season clearance for this activity could be granted following same-season confirmation of MSO non-reproduction.
- When project activities may adversely affect a previously unknown location involving a listed threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements, consult with the US Fish and Wildlife Service to resolve the conflict.
- Threatened, endangered, and sensitive animal species would be managed with appropriate mitigation measures based on the most up-to-date surveys and science

The following **REASONABLE AND PRUDENT MEASURES** are required to meet the 2005 Region 3 Forest Plan Biological Opinion issued by the US Fish and Wildlife Service on the 11 National Forest Land and Resource Management Plans in the Southwestern Region.

The FWS believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of the Mexican Spotted Owl.

1. Continue to protect Mexican Spotted Owl populations on NFS lands.
2. Protect Mexican Spotted Owl habitat on NFS lands.
3. Monitor Mexican Spotted Owl population and habitat dynamics pursuant to the revised Recovery Plan on NFS lands.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Forest Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions will implement reasonable and prudent measure 1:

> 1.1 Design engineering, forestry and forest health, fire, lands and minerals, range, recreation, and watershed projects to minimize or eliminate adverse effects to the Mexican Spotted Owl.

The following terms and conditions will implement reasonable and prudent measure 2:

> 2.1 Design engineering, forestry and forest health, lands and minerals, range, recreation, and watershed projects to reduce negative effects (direct and indirect) with the goal of only implementing those projects with beneficial, insignificant, or discountable effects within occupied Mexican Spotted Owl habitat.

The following terms and conditions will implement reasonable and prudent measure 3:

> 3.1 Mexican Spotted Owl population trends should be monitored. The Forest Service, in cooperation with the Recovery Team, FWS, and associated research stations, need to begin monitoring trends in owl populations within appropriate Recovery Units.
>
> 3.2 Mexican Spotted Owl habitat should be monitored pursuant to the Plan revision. The Forest Service, in cooperation with the Recovery Team, FWS, and associated research stations, need to begin monitoring trends in owl habitat.
>
> 3.3 Continue to support monitoring large burns (e.g., Rodeo-Chediski Fire) to assess Mexican Spotted Owl habitat characteristics.

Alternative 1 (No Action)

Direct and Indirect Effects

Under Alternative 1 – No Action timber harvest and sand/gravel removal would not take place within the Little Apache PAC. Those actions would have no effect to habitat within the PAC itself. There is approximately 1 acres of restricted area, mixed conifer habitat that is currently authorized for removal, for access to subsurface sand and gravel.

Under the remaining authorization for gravel mining, some areas are unlikely to, but may require blasting. Blasting should not occur near the top of the Apache Pit (at the ridge) where sound travels more easily. Permittee notification could be made to the Forest Service prior to doing so, allowing for potential to mitigate the disturbance. Reportedly, the equipment now available to the Apache Pit operator has prevented his need to blast since acquiring it. This limited need for blasting, along with prior notification, combined with the small area left for gravel mining (approximately <1 acres) would likely have little effect on the species.

Historic and recent reproductive success, previous and current nest site selection, and lack of any mitigation or timing restrictions up to this point may be the best indicators that this selection of this alternative would not disturb the current pair.

Cumulative Effects

Past sand and gravel removal, wildfires, timber projects, drought conditions, grazing, prescribed fires and other activities as mentioned in the document "Introduction", add to the cumulative effects to this species by reducing the amount of viable habitat that it uses. The known foreseeable projects are associated with private land fuels reduction, road maintenance, off road motorized use, and hunting related activities.

An even-aged timber prescription conducted in 1992 altered conditions in the area, leaving younger mixed conifer, more open canopy, less woody debris, a lack of understory, and few nest trees. The combinations of these conditions are typically not attractive to the MSO for nesting or roosting, and may only serve as marginal foraging conditions. However, over time, Alternative 1 – No Action in the timber harvest/gravel mining area, which is immediately adjacent to the Apache Pit, would eventually have a mature tree component and structural diversity.

Currently, the Apache Pit has a footprint of roughly 9 acres. This is an area of previous sand and gravel removal and is devoid of vegetation. When considering the cumulative effects of Apache Pit, the past actions must be taken into account. If Alternative 1 – No Action is selected, the cumulative effect would be that 10 acres of vegetation would have been removed, the majority of it mixed conifer habitat, without any likely potential for the species preferred mature mixed conifer forest type to develop in the future. Marginal forage habitat may develop due to the requirements of a reclamation plan.

Determination

Alternative 1 – No Action does not meet Determination Condition A1, due to the presence of restricted habitat within the action area.

Alternative 1 – No Action meets Condition B2, as there should be no disturbance to reproduction, but does not meet condition B1, due to impending habitat loss that would occur in the future and the associated, cumulative habitat loss.

Alternative 1 – No Action meets Condition C1 and may affect, likely adversely affect the MSO, based on the cumulative nature of habitat removal that has already occurred and that would occur within the action area. This action contributes to the destruction of future suitable nest-roost habitat and renders the area unsuitable for mature mixed conifer nest-roost habitat development.

Compliance with Region 3 2005 Biological Opinion's Reasonable and Prudent Measures

1.1 The limited size and duration of this alternative would minimize effects to the MSO. Therefore, compliance with 1.1 is being met.

2.1 Apache Pit closure in the near future, generated from the No Action Alternative, would eliminate further disturbance from occurring adjacent to the PAC and would reduce the amount mixed conifer removal that would result from continued operations within the restricted area. Therefore, compliance with 2.1 is being met.

3.1 The Forest and the Rocky Mountain Research Station (RMRS) is currently monitoring PACs on the Sacramento Ranger Station. Population trends for the Basin Range East Recovery Unit are currently being developed by the Rocky Mountain Research Station. Therefore, compliance with 3.1 is being met.

3.2 This project does not pertain to this term and condition.

3.3 This project does not pertain to this term and condition.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Under Alternative 2 – Proposed Action timber harvest and sand/gravel removal would not take place within the Little Apache PAC. Those actions would have no direct effects to habitat within the PAC.

Alternative 2 – Proposed Action proposes the removal of approximately 18 acres of restricted area mixed conifer habitat for timber removal and sand/gravel extraction. There are no documented nest or roost sites within the proposed action area; however, a limited number of live trees >24-in diameter breast height (dbh) and snags >18-in dbh are present within the proposed action area. Some of these trees may be conducive to future MSO nesting and/or roosting opportunities.

Timber harvest would occur incrementally. Alternative 2 – Proposed Action's authorized sand/gravel volume would require the clearing of surface vegetation prior to mining. The mining could then work subsurface to the appropriate depth, clearing and removing additional surface acreage and subsurface volume as authorized. Timber removal would occur only when need to access more sand and gravel volume. As such, removal would be on a relatively small scale and would be limited in duration and frequency. This would be true partially because of the lower stand density found in the previously harvested action area.

The nature of the sand and gravel removal operation is one accomplished through the use of a bulldozer. The dozer shears the rock face along temporary road switchbacks that line the exposed rock face and plows gravel down to the bottom. Some larger material is kept as is, but there is also demand for smaller rock, for which rock crushers are used. Rock crushers and bulldozers are typically and consistently operational during Apache Pit operations.

Occasionally, blasting may be needed to access rock that the bulldozer cannot move. However, an MSO breeding season restriction would be implemented specifically to address this disturbance and to mitigate effects from this action.

MSO nesting has now occurred in three distinct areas within the Little Apache PAC. The Apache Pit has operated near its current capacity for over three decades. The Little Apache birds were first found 16 years ago. When first found, the birds were nesting in the drainage that is approximately .55-mi to the east of the current Apache Pit. As Apache Pit has expanded over the last 16 years, the birds have nested in two other areas. One area (with multiple nest sites) was approximately .70-mi from Apache Pit and the most recent, 2010 nest site, was approximately .31-mi from Apache Pit.

Since 1994, birds occupying the PAC have consistently nested >.30-mi away. Chainsaw disturbance did not increase hormonal levels or cause flush responses in California spotted owls (*Strix occidentalis occidentalis*) at a distance of approximately .06-mi (Tempel and Gutierrez 2003), with a strikingly similar disturbance distance documented for Mexican spotted owls (Delaney et al. 1999). Based on nest site history, the short duration of the disturbance, and

relative tolerance to saw noise outside of .06-mi, saw operations may cause minimal, but insignificant disturbance toward the end of Apache Pit life. More effects may occur if owls deviated from their documented, historic nest site areas. However, Project Design Features in Alternative 2 – Proposed Action would account for nesting locations that may occur closer to operations.

Effects of sand and gravel removal are similar to that of timber removal, but noise levels would be higher, accompanied by more consistent and less intermittent disturbance. Gravel crushing and dozer noise are consistent during Apache Pit's daily operations. If Alternative 2 – Proposed Action would occur, the crushing and dozer noise would slowly increase over time, in relation to the western boundary of the Little Apache PAC. Some MSO habituation to the noise may occur, given its consistency. Previous nest sites and reproductive success have arguably been out of disturbance range.

Delaney and Grubb (2003) suggest that owls may be capable of hearing road equipment at a distance of approximately 0.25-mi from the source. Additionally, various bird species have been reported to abandon their nests after being exposed to ground-based and aerial disturbances. No scientific data could be located to determine the owl-weighted decibel level (dBO) for an industrial rock crusher, as is used in Apache Pit operations. However, road rock crushing equipment appears to register at similar adjusted decibel levels as industrial rock crushing equipment (Delaney and Grubb 2003, Rosaler 2005). Bulldozer usage emits a lesser decibel level than the crusher, but is similar. For the sake of this analysis, the greater decibel level of the crusher would be used for the disturbance effects analysis.

It is reasonable to assume that some level of noise due to the proposed action may be heard by birds occupying the Little Apache PAC. If the sand and gravel operation were to expand, the equipment would invariably produce sounds closer to the PAC. Based on previous (but limited) research, there is likely a threshold noise and distance at which flushing would occur. Though disturbance reaction may vary from owl to owl, intra-species ranges may be similar enough to determine sound and distance parameters to mitigate effects.

Data for MSO noise disturbance behavior is not in great supply, so comparative data from the northern spotted owl (Strix occidentalis caurina) might illustrate MSO behavior. An OHV study of sound disturbance on northern spotted owls documented no flushing behavior when the sound exposure level was ≤76 dBO (Delaney and Grubb 2003). In comparison, tree-based microphone recordings of road rock crushing equipment on the LNF documented a sound exposure level of 76 dBO at a distance of approximately .15-mi in a mixed conifer forested setting (Delaney and Grubb 2003). If subspecies flushing behavior is similar, this .15-mi distance may be the best available determinant of flush threshold for Alternative 2 – Proposed Action.

As stated, the 2010 nest location is approximately .31-mi from the Apache Pit boundary and represents the closest documented nest site to Apache Pit operations. At the end of Apache Pit life, this nest location would be approximately .23-mi from a noise source. The aforementioned research indicates that at this distance, spotted owls may likely hear the equipment, but would be unlikely to flush. If birds occupying the PAC continue to use the available nesting habitat similar to previous documented usage, noise disturbance from Apache Pit operations would not likely cause a flush response; thus, this disturbance would not likely adversely affect nesting or roosting.

Monitoring of this PAC would occur to determine nesting status. Similar to mitigations that may be necessary for chainsaw operations, Project Design Features would allow for adaptive management of protected species, should new nest/roost locations be determined closer to Apache Pit operations.

Currently, there is little opportunity for nesting within the proposed timber/gravel removal area, with the exception of a few remaining larger trees and snags. However, the stand structure that surrounds these remnant trees is not typical of nest site habitat. The slope and aspect of the action area are not consistent with previously observed nest site locations. Additionally, multi-storied vegetation, downed woody debris, and closed canopy is in short supply. However, this mixed conifer site would be classified as a restricted area by the Mexican Spotted Owl Recovery Plan. The gradual timber harvest over the proposed action area would decrease forage opportunities over time and prevent the area from develop into more suitable nest-roost habitat.

Cumulative Effects

Past sand and gravel removal, wildfires, timber projects, drought conditions, grazing, prescribed fires and other activities as mentioned in the document "Introduction", add to the cumulative effects for this species by reducing the amount of viable habitat that it uses. The known foreseeable projects are associated with private land fuels reduction, road maintenance, off road motorized use, and hunting related activities.

Currently, the Apache Pit has a footprint of roughly nine acres. This is an area of past action due to sand and gravel removal and is devoid of vegetation. The timeline necessary for sand and gravel removal within the proposed action area is estimated at three decades, but the surface footprint of Apache Pit would increase from 9 acres, up to 27 acres at the end of the proposed action.

When analyzing cumulative effects, past, present, and foreseeable future actions must be taken into account. The likely reclamation potential for this 27 acres area to develop any MSO preferred nest-roost elements would be minimal, especially given that reforestation efforts following natural disturbances such as fire have been largely unsuccessful in the Sacramento Mountains. Personal communication with the Sacramento RD silviculturist indicates that the area would be unlikely to support more than random mixed conifer trees in the future, much less a late-seral stage forest, due to the nature of the operation. Recommended rotations that even-aged silvicultural treatments be extended >200 years are contained within the MSO Recovery Plan, based on assumptions of suitable conditions to grow trees during that time. Alternative 2 – Proposed Action would alter growth medium extensively. According to the project Silviculture and Timber Specialist Report, the Apache Pit area would not have timber monitoring due to the site's future unsuitability for it. The area may provide some marginal foraging habitat after reclamation.

<u>Determination</u>

Alternative 2 – Proposed Action does not meet Condition A1, due to the presence of restricted habitat within the action area.

Alternative 2 – Proposed Action meets Condition B2, as there should be no disturbance to reproduction, but does not meet condition B1, due to impending habitat loss that would occur in the future and the cumulative habitat loss.

Alternative 2 – Proposed Action meets Condition C1 and may effect, likely adversely affect the MSO, based on the cumulative nature of habitat removal that would occur within the action area.

Specific guidelines contained in the MSO Recovery Plan call for retention of live trees >24-in dbh, as well as large snag retention within restricted areas. Recruitment of trees and management towards desirable nest-roost conditions for the species are not met by Alternative 2 – Proposed Action. Alternative 2 – Proposed Action would virtually eliminate the possibility of the 18 acres meeting threshold conditions described within the Recovery Plan and would effectively render the area largely unsuitable for future mature mixed conifer establishment and nest-roost habitat development.

Compliance with Region 3 2005 Biological Opinion's Reasonable and Prudent Measures

1.1 Alternative 2 – Proposed Action would have a mitigation measure that would have a breeding season restriction. Therefore, compliance with 1.1 is being met.

2.1 Alternative 2 – Proposed Action would remove 18 acres of mixed conifer within a restricted area on a near-permanent basis. Under the "Restricted Areas" section of the MSO Recovery Plan (p.90) "occupied" habitat is defined as occurring within a delineated PAC, whereas restricted areas (outside of PACs) are defined as unoccupied. To further confirm the unoccupied status of the project area, multiple years of monitoring, consistent with US Forest Service Region 3 MSO survey protocols, have shown that the project action area remains unoccupied. As this RPM specifically applies to projects within occupied habitat, compliance with 2.1 is being met.

3.1 The Forest and the Rocky Mountain Research Station (RMRS) is currently monitoring PAC's on the Sacramento Ranger District. Population trends for the Basin Range and East Recovery Unit are currently being developed by the Rocky Mountain Research Station. Therefore, compliance with 3.1 is being met.

3.2 This project does not pertain to this term and condition.

3.3 This project does not pertain to this term and condition.

Cultural Resources

Existing Condition

There are no key issues related to cultural/heritage resources with the proposed design of this project, and the area encompassed by project activities. This area has received 100% pedestrian survey, during which no archaeological sites (eligible or not eligible) were located. Guidance from the Lincoln National Forest plan is limited in scope and provides little specific information.

Archaeological Survey Results

Archaeological survey in any areas where ground disturbance is expected to occur would be intensively surveyed for cultural resources so that archaeological sites in these areas are recorded to standards set by the Archaeological Resources Management System (ARMS) of the Museum of New Mexico. All areas within the project have been completely surveyed to standard.

Resource Factors to be Analyzed and Units of Measure

Reporting the nature-and-distribution of sites and the level of their sensitivity to the expected effects was a fairly simple matter. Factors regarding archaeological sites include assessing a general expected number of archaeological sites in the project area, site types, National Register eligibility, and geographic locations. The general amount of survey data and survey distribution in this project area were both important to verify that project effects and project design features could apply throughout the project area.

Analysis Method/Bases of Analysis

GIS shape files of previous cultural survey, linear and area and known archaeological sites were overlaid) atop the project boundary layer () and electronic USGS maps (Cloudcroft 7.5' 1:24,000 and Sacramento Ranger District recreation map at 1:100,000 scale). These coverages are located in corporate computer drives on the Lincoln National Forest. Survey location, counts of site types, and National Register eligibility were made with verification via hard-copy files.

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects

Previous archaeological survey of this area indicates that there are no sites (eligible or not eligible) within the proposed project boundaries. As such there would be no direct, indirect or cumulative effects on the archaeological resource from Alternative 1 – No Action.

Alternative 2 Proposed Action

Direct, Indirect, and Cumulative Effects

Previous archaeological survey in the area indicates that there are no sites (eligible or not eligible) within the proposed expansion of the Apache Pit. As such there would be no direct, indirect, or cumulative effects on the archaeological resources of the district from Alternative 2 – Proposed Action.

Summary Determination of Effect for Cultural / Heritage Resources

Pre-defined measures of effect and standards for cultural resources protection are located in 'Region 3 Programmatic Agreement'. Avoiding all effects to all archaeological sites results in a Finding of No Effect, under Section 106 of the National Historic Preservation Act. Avoiding destruction or alteration of the characteristics that allow listing or nomination of archaeological sites to the National Register while allowing activities to occur within or adjacent to historic properties results in a determination of No Adverse Effect. Under NEPA, there might be some minor effects to sites, for instance, if hand-crews remove vegetation from within an archaeological site, but No Adverse Effect under NHPA. An adverse effect occurs when there is obvious alteration or destruction of the characteristics that make a site National Register eligible. The Apache Pit expansion will have no effect on archaeological sites within the project area.

The Apache Pit expansion would have no effect on archaeological sites within the project area.

Chapter 4 - Consultation and Coordination

The Forest Service consulted with individuals, organizations, Federal, state and local agencies, and Tribal governments during scoping and development of this EA. The complete mailing list used for scoping is in the project files.

Interdisciplinary Team Members

James Duran	District Ranger
K. Sánchez Meador	ID Team Leader
Greg Lind	NEPA writer/editor
Neil Fairbanks	GIS and Map Products
Yolynda Begay	Socio economics
Marcie Kelton	Recreation, Lands, Minerals
April Banks	Hydrology
Eric Dillingham	Archaeology
Marisa Bowen	Timber/Silviculture
Jack Williams	Wildlife and Botany
Patrick Mercer	Wildlife and Botany

Federal, State and Local Agencies

Natural Resource Conservation Service
New Mexico Environment Department
State of NM Environment Department
US Fish and Wildlife Service
New Mexico Fish and Game
Bureau of Indian Affairs Forestry Department
State of NM, Otero County

Tribal Consultation

The Lincoln National Forest regularly consults with the Mescalero Apache Tribal Historic Preservation Office for presence and management of traditional cultural properties (TCP), sacred locations and access to religious locations prior to completing consultation with the New Mexico SHPO's office. The forest has provided a description of project activities, polygon maps, and a cover letter to each tribal government. Tribal governments have not expressed any concerns or have forwarded any detailed information regarding TCPs in the Apache Pit analysis area. Therefore, the Lincoln National Forest considers that it has completed the Native American consultation process in good faith for the purpose of the National Historic Preservation Act, National Environmental Policy Act, American Indian Religious Freedom Act, Native American Graves and Repatriation Act, the Archaeological Resources Protection Act and other laws, executive orders and agency policies generally related to the Native American consultation process.

If a TCP, sacred area, or other use location is identified at any time by the tribes or NM SHPO in this analysis process or during the pit operation, then the Lincoln National Forest can enter into a

consultation phase with the tribal government and NM SHPO regarding the nature of the resource and mitigation. Though the Lincoln National Forest considers that it has provided a sufficient comment period to the tribes, communication between tribal governments and the Lincoln National Forest is open so that the agency could make project changes, if necessary and possible, based on new information regarding sensitive locations.

Chapter 5 – References

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APPENDIX A

Wildlife Species Information

Table 15. Species which do not occur on or near the Lincoln National Forest due to the range of the species, lack of habitat, or which only occur on an incidental basis would not be affected by the proposed action.

Scientific Name	Common Name	Status
Ammodramus bairdii	Sparrow Baird's	SC
Chlidonias niger	Tern Black	SC
Athene cunicularia hypugaea	Western Burrowing Owl	SC
Geomys bursarius arenarius	Desert pocket gopher	SC
Neotoma micropus leucophaea	White Sands woodrat	SC
Charadrius montanus	Mountain Plover	SC
Mustela nigripes	Blackfooted ferret	E
Strenula antillarum athalassos	Interior Least Tern	E
Ictalurus lupus	Headwater Catfish	S
Onchorhynchus clarki virginalis	Rio Grande Cutthroat Trout	C
Deronectes neomexicanus	Bonita Diving Beetle	S
Humboldtiana ultima	Northern Threeband	S
Holospira montivaga	Vagabond Holospira	S
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	SC

SC= USFWS Species of Concern and/or Regional Forester Sensitive Species
C = candidate species for federal protection under Endangered Species Act (ESA)
T = currently listed as Threatened under the ESA
E = currently listed as Endangered under the ESA

Table 16. Species that are not known to occur on or near the Sacramento Ranger District, though they may occur elsewhere on the Forest would not be affected by the proposed action.

Scientific Name	Common Name	Status
Thomomys bottae guadalupensis	Guadalupe pocket gopher	SC
Allium gooddingii	Goodding's onion	SC
Chaetopappa elegans	Sierra Blanca cliff daisy	SC
Cyprinodon tularosa	White Sands Pupfish	SC
Cereus greggii greggii	Desert night-blooming cereus	SC
Chrysothamnus nauseosus texensis	Guadalupe rabbitbrush	SC
Lepidospartum burgessii	Gypsum scalebroom	SC
Aquilegia chrysantha chaplinei	Chapline's columbine	S
Astragalus kerrii	Kerr's milkvetc	S
Penstemon cardinalis regalis	Guadalupe beard-tongue	S
Sophora gypsophila guadalupensis	Guadalupe mescal-bean	SC
Falco femoralis septentrionalis	Northern aplomado falcon	E
Cynomys ludovicianus	Black-tailed prairie dog	S
Eutamias minimus atristriatus	Peñasco (Least) Chipmunk	SC

SC= USFWS Species of Concern and/or Regional Forester Sensitive Species
C = candidate species for federal protection under Endangered Species Act (ESA)
T = currently listed as Threatened under the ESA
E = currently listed as Endangered under the ESA

Table 17. Species that are not known to occur on or have habitat in the project area, though they may occur elsewhere on the District would not be affected by the proposed action.

Scientific Name	Common Name	Status	Comment
Penstemon alamoensis	Alamo penstemon species	SC	Elevation of project area outside of range of occurrence
Cirsium wrigtii	Wright's marsh thistle project	SC	Wetland habitat not found within area
Argemone pleiacanthaspp. pinnatisecta	Sacramento prickly poppy	E	Elevation of project area outside of species range of occurrence
Hedeoma todsenii	Todsen's pennyroyal	E	Only found north of T14S, project at T16S and T17S.
Echinocereus fendleri var. kuenzleri	Kuenzler hedgehog cactus	E	Determined not suitable habitat by Forest Botanist.
Astragalus altus	Tall milkvetch	S	Surveys indicate absence
Lilium philadelphicum var. andinum	Rocky Mountain lily	S	Surveys indicate absence
Escobaria villardii	Villard's pincushion cactus	SC	Elevation of project area outside of species range of occurrence
Empidonax traillii extimus	SW willow flycatcher	E	No riparian habitat present.
Speyeria atlantis caanensis	Sacramento Mt. silverspot butterfly	SC	No known historical occurrence within project area.
Icaricia icarioides	Sacramento Mt. blue butterfly	SC	No lupine found within analysis area.
Buteo albonotatus	Zone-tailed hawk	S	Foraging and nesting habitat not present.
Falco peregrinus anatum	American peregrine falcon	SC	No cliff habitat in project area.
Vireo bellii	Bell's vireo	SC	Not within elevation range of species
Zapus hudsonius luteus	New Mexico meadow jumping mouse	C	No habitat or historical occurrences within project area.

SC= USFWS Species of Concern and/or Regional Forester Sensitive Species
C = candidate species for federal protection under Endangered Species Act (ESA)
T = currently listed as Threatened under the ESA
E = currently listed as Endangered under the ESA

Table 18. The following species may use the project analysis area on an incidental basis, or have minimal amounts of historic habitat, but do not depend extensively upon the area resources for their continued existence.

Scientific Name	Common Name	Status	Comments
Haliaeetus leucocephalus	Bald eagle	S	Occasional foraging during the winter and early spring. Not found in area during other times of the year.
Corynorhinus townsendii	Townsend's big-eared bat	SC	Occasional foraging. Roosting not affected.
Accipiter gentilis	Northern goshawk	SC	Inadequate Ponderosa pine in project area. Occasional foraging may occur.
Aneides hardii	Sacramento Mountain Salamander	SC	Surveys from 1989 and 2010 indicate absence. Any habitat is patchy and minimal

Scientific Name	Common Name	Status	Comments
Tamiasciurus hudsonicus lychnuchus	Ruidoso red squirrel	S	Limited habitat elements within project area- lack of interlocking crown and mature fir

SC= USFWS Species of Concern and/or Regional Forester Sensitive Species
C = candidate species for federal protection under Endangered Species Act (ESA)
T = currently listed as Threatened under the ESA
E = currently listed as Endangered under the ESA

Figure 4. Detailed Wildlife Species Analysis Map